The Online Journal of Distance Education and e-Learning

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Message from the Editor-in-Chief

Dear Colleagues,

TOJDEL welcomes you. TOJDEL would like to thank you for your online journal interest. We are delighted that almost 172,000 educators, teachers, parents, and students from around the world have visited for five years. It means that TOJDEL has continued to diffuse new trends in distance education to all over the world since January, 2013. We hope that the volume 6, issue 3 will also successfully accomplish our global distance education goal.

TOJDEL is confident that readers will learn and get different aspects on distance education. Any views expressed in this publication are the views of the authors and are not the views of the Editor and TOJDEL.

TOJDEL thanks and appreciate the editorial board who have acted as reviewers for one or more submissions of this issue for their valuable contributions.

TOJDEL will organize IDEC-2018 International Distance Education Conference (www.id-ec..net) between July 18-20, 2018 in Paris, France. This conference is now a well-known distance education event. It promotes the development and dissemination of theoretical knowledge, conceptual research, and professional knowledge through conference activities. Its focus is to create and disseminate knowledge about distance education. IDEC conference books have been published at **http://www.id-ec.net/idecpubs**

Call for Papers
TOJDEL invites you article contributions. Submitted articles should be about all aspects of distance education. The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to TOJDEL. Manuscripts must be submitted in English.

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Abstract: The present study analyzed challenges faced by a fast-growing southern African institution of higher learning as it transformed its print-based distance education programs to online. The study also analyzed potential solutions to the challenges in the institutions' bid to thrash out a vibrant online learning system. The transition process began with the initial implementation of a blended mode of delivery which would latterly culminate into a fully online system. The study demonstrated that in the absence of availing resources, it only takes determinism and proper planning to embark on a successful transition process to online learning. The study presents implications to administrators, instructional designers and faculty.

CONCEPTUAL FRAMEWORK

Distance education started as early as the 1800s at the University of Chicago which incepted the first correspondence program in the United States. Before that time, particularly in preindustrial Europe, education had been available primarily to males in higher levels of society (AECT, 2017). According to AECT (2017), the most effective form of instruction in those days was to bring students together in one place and one time in order to learn from one of the masters. Correspondence study, reports (AECT 2017), which was designed to provide educational opportunities for those who were not among the elite and who could not afford full-time residence at an educational institution, was looked down on as inferior education. According to Pittman (1991) for example, correspondence education offended the elitist and extremely undemocratic educational system that characterized the early years in the United States. In modern times though, the mindset in the world has considerably changed. A report prepared for the Council for Higher Education Accreditation (CHEA) by the Institute for Higher Education Policy indicated that distance learning is growing rapidly, not only as a supplement to traditional institutions and programs, but also as a replacement for those institutions and programs (CHEA, 1998). Indeed in the last couple of decades, distance education has exponentially proliferated and according to Harasim (2000), the first wholly online course was offered in 1981.

While institutions of higher learning had been offering print-based distance education in the past, in recent years there has been a shift in direction and most such institutions have transitioned to online learning. This is a practical trend as the education world has gone more electronic and technological in the modern era. Modern teaching and learning is making full use of cyber-space to make education accessible to more and more people. As Allen and Seamen (2011) contended, the demand for the flexibility online learning afforded, coupled with the increased competition between institutions of higher learning, predicted the growth of online learning. Again, as Palloff and Pratt (2000) observed, the online classroom is a potentially powerful teaching and learning arena in which new practices and new relationships can make significant contributions to learning.

DISTANCE EDUCATION IN AFRICA

Distance education in Africa has been instrumental in lowering illiteracy rate, and more importantly turning about "dropout rates" into "drop-in rates" (Aderinoye & Ojokheta, 2004). Light (2009) contended that distance education is emerging as an efficient way to bring academic courses and training programs to Africa. For example, Light (2009) identified the World Bank's African Virtual University (AVU), which has for over two decades been up and running in Africa. Launched in 1997, the AVU enables students in 16 African countries to take courses and seminars

taught by professors from universities around the world through a synchronous system that uses television technology. In this system, the lessons are mainly taught by European and American faculty members, and they are beamed to 22 universities in Africa. The biggest issue with AVU however, is the program's cost. During its start-up period, AVU was financed largely by grants. To that end, in recent years, the World Bank had been looking for private partners to share both the costs and the benefits.

Another distance education program in Africa, Distance Education for Africa (DeAfrica), is an educational organization based in Nairobi, Kenya. Its objective is to relieve poverty, promote information and communication technologies (ICT) and improve access to efficient and effective world-class training and education courses to poor communities in Africa. DeAfrica's current program reaches students in Kenya, Nigeria, Burundi, Mali, Democratic Republic of Congo, Central African Republic, Zambia, Tanzania, Uganda, Botswana and South Sudan. DeAfrica's current course delivery methods include Moodle (asynchronous platform), Blackboard Collaborate (synchronous platform) and E-books (DeAfrica, 2018).

According to Mnyanyi and Mbwette (2009), the future of open and distance learning (ODL) in Africa is an important matter for discussion. As Ng'wandu (2006) asserted, ODL has the possibility of accelerating access to education, making knowledge available to many through changing ways of managing ODL institutions from traditional to more effective and efficient ways of operating competitively. Mnyanyi and Mbwette (2009) further contended that challenges in building sustainable ODL programs in Africa include the requisite that the modern distance learner will have to learn how to use information and communication technologies (ICT). That according to Mnyanyi and Mbwette (2009) becomes a challenge in Africa considering that ICT is not taught in many places (and where it is taught it is relatively expensive). According to Braimoh and Osiki (2008), another drawback that would hinder progress of modern distance education in developing countries is the issue of unstable power supply which is a serious problem.

Distance education in Malawi, a developing country in southern Africa, began with a national needs assessment conducted by a group of Malawian educators in 2001 (Zozie at al., 2004). The needs assessment was intended to find out more about potential learners in the country. A pilot distance education project involving sampled serving high school teachers was then conducted in a blended type of program that produced promising results. Since then, several institutions of higher learning in Malawi have established distance education programs that mostly started with print and continue to grow. Mzuzu University, Domasi College of Education and Lilongwe University of Agriculture and Natural Resources are the institutions that are offering distance education to date, and mostly using the print mode of delivery.

And so due to the fact that for over two decades most African institutions of higher learning offered print-based distance education since its inception in the continent, there has been little published on the challenges faced by such institutions in adopting the e-learning mode of delivery. Against this background and in the wake of the proliferation of online learning across the globe, the present study sought to analyze the complexities that a fast growing southern African institution of higher learning went through as it worked on transforming its print-based distance education program into a vibrant online asynchronous online learning program.

TRANSITIONING TO ONLINE TEACHING

While distance education has been in existence for over the past three to four decades, the evolution of online learning has been growing rapidly in the higher education field (Barrett, 2010). Holgan (1998) observed that while universities are feeling the pressure to control costs, improve quality, focus directly on customer needs, and respond to competitive pressures, information technologies (IT) have the potential to solve many of these problems. As Horgan (1998) contended, information technologies can change the roles of students and faculty, facilitate more learner-centered personalized education, save money through improved business processes and expand the scope and content of the curriculum. African universities are no exception to this trend. While print-based distance education has for a sometime been the order of the day in most African institutions of higher learning, recently the field has seen most of them turning towards the electronic media. As Palloff and Pratt (2000) contended, the online classroom is a potentially powerful teaching and learning arena in which new practices and new relationships can make significant contributions to learning. In order to successfully navigate the power of this medium in education, faculty must be trained not only to use technology, but also to shift the ways in which they organize and deliver material. This shift can maximize the potential for learners to take charge of their own learning process and can facilitate the development of a sense of community among learners. So, transitioning to online teaching is not simply a matter of taking course material and post it online, it is about crafting a vibrant, active environment that engages

learners to the fullest and makes them able to interact with course content, with one another and the instructor in a very flexible manner. Palloff and Pratt (2000) further argued that the online classroom is a potentially powerful teaching and learning arena in which new practices and new relationships can make significant contributions to learning. In order to successfully navigate the power of this medium in education, faculty must be trained not only to use technology, but also to shift the ways in which they organize and deliver material.

While institutions choose to offer online courses for a variety of reasons, one is the increased access to education the online medium affords (Allen & Seamen, 2011). According to Allen and Seaman (2011), adults for instance, may want to move from the skills they acquired at an earlier time and learn new skills. These working adults, many with families, want the ability to learn what they want, when they want, and where they want. According to Allen and Seaman (2011), online education provides access to students who have no means of transportation, or students whose schedule does not allow participation during a rigid class meeting time. Allen and Seaman (2011) further contended that online education also provides access to students who are interested in a subject matter not offered at an institution within commuting distance. Many institutions implement online education because of the flexibility it provides students, faculty, and the institution (Allen & Seamen, 2011). To that end, online education becomes an equalizer, giving educational access to those who otherwise might be deprived of learning opportunities.

When comparing traditional teaching with online teaching, Karber (2003) attributed four reasons for the attractiveness of online programs. First, individuals who have work or family constraints can benefit from online learning. Lyons (2004) identified three groups of students who find online programs attractive. They are "busy working people, often on shift who want to advance their career, frequent travelers, those who physically find it difficult to attend college and parents who want to, or have to, spend more time at home with their children" (p. 448). In the case of Malawi and most African countries, the problem of small numbers of higher education institutions means that many capable students cannot access higher education. The establishment of online programs in a country like Malawi will potentially see an increase in the number of students being enrolled for university studies. Reeves and Brown (2002) for instance, cited one online program for superintendent's certificate in one Texas University and 90 educators signed up for the first class. Classes were run by superintendents serving as adjunct faculty. This example showed how online programs address the needs of this population of educators.

The online learning environment requires instructors to make adjustments to teaching practices (Grosse, 2004). "Moving from face-to-face teaching to online teaching requires faculty members to make a major transition in their instructional approach" (Sugar et al., 2007, p.367). The transition to the online environment necessitates changes in faculty and student roles. Faculty are no longer perceived as the sole providers of knowledge, but rather educational facilitators and cheerleaders (Palloff & Pratt, 2000). This implies careful and systematic redesign of course content to fit online learning pedagogies.

MacDonald (2014) brought up the question of preparation in redesigning a traditional class into an online course. The challenge, he argued, is to drive students with an interactive approach. That is, making sure that online students are not isolated from one another and from the instructor, adopting teaching strategies that will engage them fully and make them doers of knowledge and not just absorbers of content. MacDonald (2014) also contended that there is need for online learners to adapt to good time management strategies and scheduling practices. That is because in the online learning space, there are many flexible options but if students become lazy and fall behind, they will fail. As Shearer (2003) observed, if the online learning environment is too structured and rigid, the life demands experienced by learners may leave them feeling forced to drop out. It therefore becomes crucial to craft a real vibrant learning environment that makes students comfortable and free to express themselves fully. Barrett (2010) also contended that there is a growing need to offer better quality online teacher training to current and potential online instructors to better enable these instructors to meet the ever-changing need of their online learning populations. In essence, Barrett reiterates not only the importance of developing quality instruction tailored for online learning, but also training instructors in order to prepare them thoroughly for teaching in a highly technological online learning environment.

Belawati (2005) observed that "in terms of ensuring quality in learning processes, the

challenge for open and distance learning institutions is not only to ensure learner support that is both accessible and relevant, but also to encourage students to participate in and use support systems that ensure quality learning" (p. 4). Essentially, Balawati (2005) emphasizes the importance of building a vibrant support system for online students and making the students to use the support system. A good student support system should actually be built within a learning management system, making it easy for students to get help when technical issues, for example, occur.

In summary, the online classroom is a potentially powerful key to making higher education accessible to many capable students. Online learning becomes a tangible answer to contexts like Africa, where access to higher education is limited by a small number of institutions of higher learning. The transition to online learning brings challenges of crafting a truly engaging learning experience that drives the learner to freely interact with the content, other learners and the instructor. This is opposed to be an isolated student who sits alone and absorbs content when it is presented in a learning space. Apart from developing quality online courses, it also becomes crucial to train instructors to be able to teach in the online environment and be able to cope with the changing needs of online learners.

PURPOSE OF STUDY

The purpose of the present study was to analyze challenges faced by a fast-growing southern African institution of higher learning as it transformed its print-based distance education programs to online. The study also analyzed potential solutions to the challenges in the institutions' bid to thrash out a vibrant online learning system. For about two years since distance education was introduced, the institution had offered courses in in a wide range of areas in Agricultural studies using a blended type of approach involving students attending two week orientation sessions with their instructors before heading out to collect module printouts from three established centers in the three regions of the country. Students would then indulge in independent learning at home. However, plans were thrashed out to engage tutors who would, from time to time, visit with the students and assist them as they completed course requirements. And so the University latterly made a decision to switch to electronic media mainly due to complexities with mailing logistics that led to numerous assignments going missing. The transition would not come without challenges however, and the present study analyzed such challenges and how the University addressed them in its bid to go all-online against a background of resource-related challenges facing most African institutions of higher learning. Specifically, the study sought to answer the following two research questions:

- What specific issues did the institution in question encounter as it transitioned to online learning and what solutions were put into place to allay these challenges?
- What implications did these issues have on building a vibrant online distance education system at the institution?

METHODS AND DATA SOURCES

CONTEXT AND PARTICIPANTS

Having offered courses through print-based media since 2015 when the directorate of open and distance learning (ODL) was established, in the year 2017, an institution of higher learning in a developing country in southern Africa made a decision to switch the mode of delivery to online. Considering the complexity of transitioning from print to fully online in a region in where it had never been done before, the institution embarked on a gradual process by initially implementing a blended mode of delivery. By the end of 2017, 1016 distance students had been enrolled for four initial programs namely; Bachelor of Science in Agricultural Economics, Bachelor of Science in Agribusiness Management, Bachelor of Science in Agriculture Extension and Bachelor of Science in Agriculture Innovations. The programs would be offered online using free sites of Moodle learning management system while continuing to deliver modules to students in print form. Moodle came in handy because the University had in the recent past experienced the issue of missing assignments mailed through the local post office. To that end, satellite centers in the country's three regions were established and students were given access to these centers where they would be able utilize internet services and be able to turn in assignments. The Institution would therefore introduce the online mode by giving students the ability to submit assignments online through the Moodle dropbox. The blended mode would involve printed course modules which would be collected by students from their nearest satellite center and in turn, submit completed assignments online through the Moodle dropbox. With this new mode of delivery, students would no longer be allowed to mail in printed assignments. Rather, once students turned in assignments in Moodle, staff from the Directorate of Distance Learning would print them out to be forwarded to instructors. Once assignments were graded by instructors, distance education staff would again dispatch them to the three centers where students would collect them. In order to simplify this process and transition to fully online, the University engaged a computer expert to train instructors on using advanced features of Moodle that would in turn enable them to access student submissions online and also provide feedback to students from within the Moodle interface. This process would enable students to access assignment feedback from within a Moodle course shell that they were enrolled to, instead of collecting printed graded assignments.

DATA COLLECTION

Data for this study was collected using qualitative content analysis. Originating from the communication sciences, content analysis is an empirical method that used to examine text and images in order to identify messages and meanings (Hartley & Morphew, 2008; Krippendorff, 2013). A more modern definition describes content analysis as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p. 1278). Fraenkel, et al. (2015) observed that content analysis can be used to formulate themes out of large amounts of descriptive information and obtain information useful in dealing with educational problems. In the present study, the process of transitioning from print to online learning at an institution of higher learning in Malawi, southern Africa, was analyzed for arising issues and potential solutions. As the transition to online learning took place, content of progress reports, meeting minutes and presentations to stake holders was analyzed for arising issues and potential solutions. And so these issues arose from the whole intricate process of transitioning to online learning in the context of meager resources to facilitate the process. As the whole process of transitioning to online learning unfolded, a google document was created and all issues, outright solutions and potential solutions were systematically recorded for analysis.

DATA ANALYSIS

TABLE 1: ISSUES, SOLUTIONS AND POTENTIAL SOLUTIONS

When a fast-growing national university on the southern part of Africa decided to transition to online learning distance education, it had to deal with numerous issues that would otherwise derail the process. The table below summarizes those issues including outright solutions and potential solutions.
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- **No source of salaries for distance education staff** - Students to pay online learning fees, source additional funds from outside funder.
- **Unstable Calendar in country's institutions of higher learning** – No plan in place to address problem.
- **Poor internet connectivity nationally** - Three centers established in three regions, students allowed to use internet facilities at centers to access course material.
- **Low technological competency in online students** – Plan to organize training sessions in computer applications at three centers for incoming students.
- **No tutorial services available for online students** – Plan to develop tutor guides, tutors employed.
- **Long assignment turn-around resulting to delayed feedback to students on their work** – Dropbox facility in Moodle to potentially rectify this problem.
- **No online student support services in place** – Tutors to help students at centers and online.
- **No online learning curriculum in place** – Distance education curriculum development initiated in liaison with Deputy Vice Chancellors' office.
- **No online learning platform** – Moodle free sites identified as official Learning Management System (LMS).
- **No quality assurance plan for online learning in place** – Plan to develop a framework for assuring quality.
- **Potential high dropout due to inability to pay tuition fees** – Lobbying with Higher Education Grants and Loans Board to include distance students.
- **Faculty not trained for online teaching using an LMS**–IT expert identified to train faculty.
- **Faculty not trained to develop online modules**– Plan to engage expert to train faculty in online module development.
- **Need for University to learn from experienced online learning institutions** – Partnership established with a Zambian online learning institution, subscription to membership to Distance Education Association of Southern Africa effected.

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DISCUSSION

Research Question 1: What specific issues did the institution in question encounter as it transitioned to online learning and what solutions were put into place to allay these challenges?

First of all, the issue of sourcing salaries for staff at the newly established Center for Open and Distance Learning arose. Procedurally, the Center had to make enough money from fees to fully sustain itself and pay its staff. However, in an ailing economy, it would not be feasible to burden online students with heavy fees as that would scare them away from accessing higher education. Total fees for online students were pegged at about $400 an academic year. Considering that this fee would not suffice, the University decided to introduce more courses at certificate and diploma level to generate income that would be channeled towards its distance education endeavors. Again, the country's institutions of higher learning had in the past experienced unstable academic calendars due to financial issues facing them. From time to time, faculty members would go on industrial strike that badly hampered progress of students. Online students would not be spared from these calendar issues since faculty who teach traditional courses were the same teaching distance education courses. However, due to the lack of an immediate solution, no plan was put in place to address this problem. Another problem that ensued was that the Center for Open and Distance Learning admitted multiple cohorts within a short period of time resulting in varying academic calendars. This ended up overstretching faculty members who are normally already stretched teaching regular, traditional students. To allay the situation, the University had to adjust the distance education academic calendar several times in order to make the system work. This, however, resulted in extending a single semester to up to as long as seven to eight months.

Another problem that online students would face in a developing country where the internet connectivity infrastructure was not yet up to scratch was access to reliable internet services. It would be a challenge for students to access internet from their homes in a third world country. In a more positive development, since the University had established three satellite centers in the three regions of the country, students would be allowed to access internet services at these centers depending on which region of the country they resided. It must however be pointed out that even at the centers, the internet was slow mainly due to inadequate bandwidth. Also, the cost of Internet services is very high in the country and that would negatively impact delivery. Again, most students enrolling with the University as online students would have technological competency issues (a must for online students) upon entry. To allay this problem and prepare students to take online courses, the University put in place a plan to organize training sessions in computer applications at the three centers for incoming students. As observed by McPherson et al. (2003), online tutoring has been widely considered as a crucial factor in the success of computer-mediated collaborative learning activities. As the transitioning to online learning took shape, the University quickly realized that no tutorial services were available for online students. To that end, tutor guides were developed and part time tutors engaged, who would be working with online students primarily for two hours a week online, and also by meeting with them face-to-face at the three centers from time to time.

One outstanding issue the University had faced while allowing students to turn in paper assignments was a long assignment turn-around which resulted in delayed feedback to students. Moodle free sites was identified and selected as the University's official learning management system. For starters, some faculty members used the system to compliment traditional teaching. Overall, the introduction of Moodle as a learning management system would essentially eradicate the problem of delayed feedback as the dropbox facility would mean a quicker turnaround of submitted work. It was however immediately realized that there were no online student support services in place and students would inevitably struggle in the absence of a vibrant support system. While the institution was not ready to implement a fully online support system, the engaged tutors would be tasked with providing the needed learner support at the three centers of learning. It was also found of paramount importance to quickly put together an online learning curriculum so it would be adhered to. The first step the University took was to initiate this process in liaison with the office of Deputy Vice Chancellor.

As the transition took effect, it was realized that the University had no quality assurance plan for online learning in place. Plans were therefore thrashed out to develop a framework for assuring quality of online learning. A rubric for evaluating online courses possibly be developed in the future as a potential permanent solution. It was also perceived that there would be a potential high dropout rate due to inability to pay tuition fees which would be high to most students due to poor economic conditions facing most middleclass and lower families in the country. A decision was quickly made for the institution to lobby with the Higher Education Grants and Loans Board to include distance students in its disbursement.

Faculty members had also not been trained for online teaching using a learning management system such as Moodle. To address this problem, a computer information technology expert was identified to train faculty members. A related more critical issue that arose as the institution embarked on transitioning to online learning was that online teaching faculty lacked the expertise to develop course modules for online teaching and learning. The University was quick to come up with an answer to this problem by hiring an expert in online module development to train faculty members.

Finally, in order to stay abreast with trends in online learning in the 21st century, the University administration decided that it would benefit from partnering with well-established institutions in online learning. For starters, a memorandum of understanding (MOU) was developed and signed with a Zambian institution called In-service Training Trust (ITT). Among several, the MOU spelled out plans to collaborate with the institution by co-offering some courses. Also, the University went ahead and officially registered as a member of the Distance Education Association of Southern Africa (DEASA). It was perceived that this membership would provide further avenues for establishing partnerships with other institutions of higher learning. Finally, the University also decided to hold discussions with and register with a local organization called Open and Distance Education Association of Malawi (ODEAMA).

Research Question 2: What implications did these issues have on building a vibrant online distance education system at the institution?

First of all, by identifying issues that would hamper the transition, the University embarked on a mission that would clear the way ahead by solving problems that stood in its way. To begin with, while the $400 fees online students would pay per academic year might not suffice in the modern economy, it would highly subsidize the cost of taking classes throughout a program's duration. But it must be pointed out that the issue of unstable academic calendars due to faculty members going on industrial strikes would continue to impede progress of students in various online programs. In fact, other institutions of higher learning in the country had for a long time been grappling with this problem and no substantive solution ever seemed in sight. The issue of irregular semesters for distance students would have to be dealt with going forward. It would not be sustainable to enroll multiple cohorts at a time and have extended semesters that would run for as long as eight months. The University would have to normalize this negative trend in order to smoothly run online programs.

The issue of poor internet connectivity infrastructure and inadequate bandwidth is something most African students have had to live with. The most important thing is that the institution had internet at its three centers. And so even though the speed might have been somewhat slow, students would still be able to access content and turn in assignments. As had been the trend in the recent past, the internet infrastructure continues to improve in the country and so issues to do with speed would naturally subside over time.

Engaging part time tutors who would work with online students for two hours online each week and meet them face-to-face once in a while would only propel the institution to higher heights when it comes to improving quality in online learning. As students acclimatized themselves in a new online learning environment, the tutors would make sure the process was seamless. Again, the fact that Moodle had been adopted as the official learning management system would ensure that assignments reached instructors faster and feedback was prompt. With proper management of this new system, the transition would be poised to succeed. However, the University would have to move faster and develop a framework for assuring quality of online learning. For example, hiring instructional designers who would then develop a rubric for evaluating online courses would ensure that standards were consistently maintained and upheld. In the same way, while a computer expert was hired in the interim to train faculty on handling an online class, hiring full time instructional designers would ensure that faculty had reliable support, not only at the beginning but throughout. For instance, instructional designers would not only train faculty in module development, they would also act as the learning management system support help desk, making sure that issues that Moodle posed to faculty members were dealt with by experts.

Finally, partnering with world institutions in online learning would have to be sustained so that the University would continue to stay abreast of trends in online learning which is still a relatively young field. And so partnering with another African institution should not be enough, the University would have to be more ambitious and identify other institutions from as far as the United States and Europe to partner with.

CONCLUSIONS

As online learning continues to proliferate across the networked world, African institutions that had in the past implemented print-based distance education programs are beginning to transition to fully online. However, the process does not come without challenges in the developing world and Malawi is no exception. The present study clearly demonstrates that in the absence of availing resources, it only takes determinism and proper planning to embark on a successful transition process to online learning. And so while numerous institutions have struggled with innovation due to lack of enabling resources, the present institution braved an environment of meager resources to embark on a promising journey to 21st century-type distance education. By first identifying issues that would hamper the transition, and by proposing and gradually implementing solutions that would address the issues, the University quickly made tremendous progress in establishing a future, vibrant, online learning system in Africa. For example, the establishment of three centers in a three-region country and hiring of online tutors invariably solved potential problems that would otherwise impede growth. Indeed, the tutors would make it easy for students to get the online learning support they always need. With time, the University would be able to conduct all the tutoring fully online. Going into the future, naturally, the programs will continue to grow and things will continue to logically fall into place. At the same time, obstacles will always arise, but with such a resolute foundation and determinism, the University is primed to continue to put structures in place in order to be able to allay such issues as they occur.

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IMPLEMENTING MOORE'S MODEL OF INTERACTION IN A FLIPPED-CLASS INSTRUCTION

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Abstract: This study aimed at identifying undergraduate students' interaction in learning English language using the flipped-class instructional model, based on a-fourth component of Moore's model of interaction. There were four aspects to identify, namely: student-peers' interaction, student-instructor interaction, student–contents interaction and student-technology interaction. The study employed a mixed method research approach, the Questionnaire survey and focus group interview were used to assemble in-depth information. 31 respondents answered the questionnaire and 10 respondents were involved in a focus group discussion. The result revealed that students' interactions were well established in the flipped-class environment, including interaction with peers, instructor, content, and technology. Students' interactions were not only established in-class activities but also continued beyond the walls of the classroom and beyond the normal class hours. These findings confirmed that students were able to learn the content not only from the instructor but also from peers. Pre-class video recorded lectures were also allowed students to become more independent outside of the classroom learning. Besides, the interaction was well-established between students and content - allowed students to pause and replay the videos as often as they needed without having to lose themselves in note-taking. Based on the analyses, this study has contributed to better understanding of flipped-class instruction in teaching-learning English in the Indonesian context.
Keywords: Flipped classroom, EFL, Interaction, Perceptions, Blogs.

INTRODUCTION

In Indonesia, English is considered as a foreign language (EFL) and obligatory subject taught from elementary school till university level (Dimyati & Mudjiono, 2009). However, Madya (2010) emphasizes that English is barely practiced by Indonesian students outside the class or in daily life because it is a foreign language. Although English is not the first or second language for Indonesians, it is widely accepted as an important language in Indonesia because of globalization (Yuwono, 2005). In the Indonesian context, a good mastery of English will indeed help accelerate development of the country for two major reasons: first, to support mastery of technology and science, since most of these resources are published in English and much valuable scientific information provided on media is also published in English. Second, English is an international language used for various international communication purposes such as business, diplomacy, politics, and education (Madya, 2010). Besides, in Indonesian higher education context, Zainuddin and Keumala (2018) mentioned, most students are still educated in the environments of lecture and textbook-centered approaches which made learning unattractive and student's passive in learning activities. Students usually lack time to interact with other students and instructors in the class or outside of the class

It is believed that the traditional learning approach which focuses on the teacher as the center knowledge is irrelevant in today's digital age (Wang & Heffernan, 2010). Thus, the use of technology and 21st-century learning skills in teaching language is highly recommended to produce autonomous learners, critical thinkers, information seekers, disciplined, logical and analytical, curious, open and highly motivated, interdependent and interpersonally competent, persistent and responsible, creative, knowledgeable and skillful about the learning process (Klimova & Semradova, 2012). According to Ghasemi and Hashemi (2011), the use of information and communication technology in teaching a foreign language provides greater freedom and convenient learning environment and the students can learn in the real context. Learning a language with the use of technology had been applied more than twenty years and numerous studies revealed that technology plays a very crucial role in fostering students' self-directed learning skills in learning a second language (Barrutia, 1985; Levy, 1997).

In today's digital world, the instructors are demanded to employ different instructions that allow students to have strong motivation, self-directed learning skills, and interactions in their learning. Flipped classroom is one of the current trends in the field of education, which can potentially be implemented to support the needs of twenty-first-century learners. According to the New Media Consortium (NMC) Horizon Report published in 2014/

2015, flipped classroom are considered as emerging pedagogies and technologies in the 21st century. It is recommended that this pedagogy be performed in schools and higher education institutions worldwide to support 21st-century learning skills (Johnson et al. 2015). Zainuddin and Halili (2016) also reported that the flip-class approach has been implemented worldwide in various fields of study such as Algebra, public health, Psychology, Business, Economics, Science, and English language course. Flipped classroom is defined as an approach of learning activity where the students learn the content of the video outside the class hour and establish a group discussion in the class activities (Zainuddin & Attaran, 2015). The students learn through hands-on learning activities and limited time is dedicated to the lectures; this means students will use the class time for real world activities to solve problems.

STUDENTS' INTERACTION
Interaction is a communication and cooperation among all elements in the community. In the classroom, students can establish interaction with other students, teachers and learning materials (Van Lier, 2014). Students' interaction is establishing a welcome and good communication and response among learners and between learners and teacher and learners and contents (Moore, 1989). Many studies stress the importance of students' interaction in teaching and learning activities (Koomen, Spilt, & Oort, 2011; Roorda, Cornelius-White, 2007; Thijs & Koomen, 2008). Interaction among all communities in the teaching and learning process is very necessary in accomplishing the goal of learning (Cho & Jonassen, 2009; Cho & Kim, 2013; Richardson & Swan, 2003).

In teaching by using technology, interaction is a very significant element to strengthen social communication among students and the instructor whether in the class or outside the class using various technologies tools (Woo & Reeves, 2007). It proves that students' social interaction in technology learning environment is more effective than that in traditional classroom without using technology; students in traditional classroom only interact physically in the classroom but not outside class hours (Wang, 2013). It can be assumed that students' social interactions will not decrease when technology media is integrated into the classroom. Technology use will indeed help students interact easily with all communities both inside and outside the class. Then, lack of students' interaction also becomes a crucial issue in Indonesia which affects students' learning of English. Tutyandari (2005) notes that poor teacher- students' interaction and student-student interaction tend to make teaching and learning English passive and ineffective. Lu, Hou, and Huang (2010) emphasize that when student interaction is limited in learning activities, the students lack opportunities to practice language with their peers, solve problems in groups and exchange ideas.

MOORE'S MODEL OF INTERACTION
In this study, interaction referred to Moore's theory (1989), where students construct their interactions with peers, instructor, content, and technology either in-class or outside of the classroom. Student-peer interaction will support students' exchange of information with peers, solving of problems and help students understands the content of learning (Kellogg & Smith, 2009). In this study, the students was expected to interact with peers not only physically within face to face in the classroom but also virtually outside of the class using various technological platforms such as Learning Management Systems (LMSs), Blogs, Wikis, or social media. Besides, student-instructor interaction would also benefit students in obtaining feedback from the instructor. Within this interaction, it is expected to bridge the gap between student-instructor in knowledge-sharing and learning.

Moreover, the interaction would also be well-established between students and contents which mean that the students are able to engage with the content in an interactive way. In the flipped-class context, for example, the students might be able to take notes, pause, and replay the video content according to their needs - this is the so-called student-content interaction. Bergmann and Sams (2014) mentioned that in flipped classroom environments, students would not only watch the video lectures but also be able to interact with the video lessons by stopping the videos to take notes or replaying points of confusion. Besides the three types of interaction, Hillman et al. (1994) proposed the other type called student-interface interaction or student-technology interaction. Based on this discussion, the authors briefly summarize the model of students' interaction in the flipped classroom study as follow:
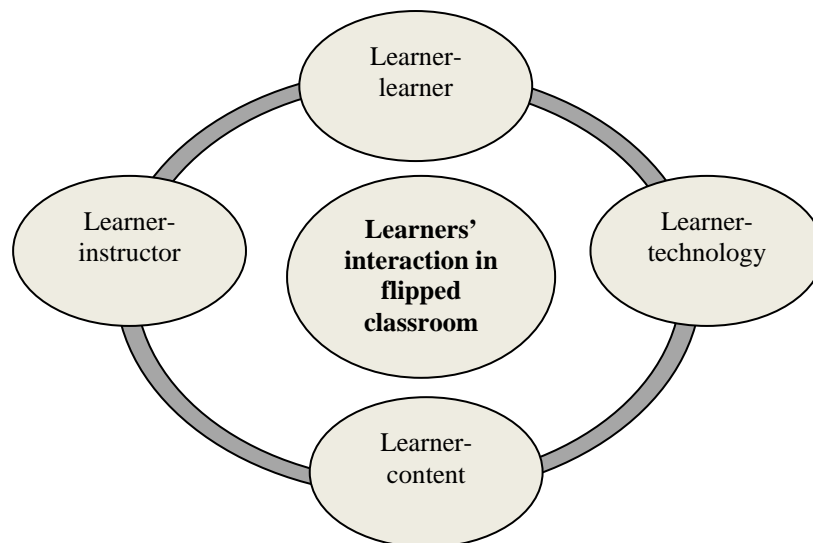
Figure 1. A conceptual model of students' interaction in the flipped classroom

METHODS

This study aimed at identifying students' learning perceptions in the English language flipped-class instruction in terms of interaction and participation. The study was conducted using a mixed method design and took place at a selected university in Indonesia. The rationale for employing a mixed method design in this study is to triangulate both quantitative and qualitative data - the so-called methodological triangulation. It is in coherence with a statement of Creswell (2008) that using multiple approached in a single study would strengthen both quantitative and qualitative data, and enable the researchers to obtain rich data and interpret them more in-depth. Participants of this study (N = 30) were from an English class at selected a University in Indonesia. All participants were second-semester students in the English education department. In selecting the sample, the researcher used a purposeful sampling, some 31 students completed survey questionnaires and 10 students were involved in a focus group discussion. The rationale for choosing these participants was that none of them has any experience in the EFL flipped classroom.

The questionnaires consisted of five-level Likert Scale items which supplied the quantitative data for the study (1: Strongly- 5: Strongly Agree). Reliability of the questionnaire was tested during a pilot study and the result of Cronbach's alpha was .862. The researcher then employed a focus group interview to investigate more in-depth students' perceptions about learning the EFL flipped-class instruction. In this study, the researcher analyzed both data separately, starting with quantitative and subsequently followed by qualitative data. This method is considered as an explanatory sequential design. This means that qualitative data analysis would help support and elaborate in-depth analysis of quantitative data (Creswell, 2008). The questionnaire data were analyzed in descriptive statistics using the SPSS software. The goal was to summarize a particular set of data for graphical display (Johnson & Cristensen, 2008). The data responses were analyzed in column charts with the percentage, Mean (M) and Standard Deviation (SD). The interview analysis of this study used a step-wise design described by Patton (2002). The process consisted of three steps: (1) Assemble the raw case; the interviews were transcribed by the researcher to get the print version of the interview, (2) Construct the case record; the raw data of students' motivation was classified in themes and edited by the researcher, (3) Report a final case; the result of interview discussion was reported descriptively according to their themes.

FINDINGS

According to the response rate analysis, 31 students completed the survey and 10 students were involved in a focus group discussion. The analysis of questionnaire data was divided them into four sections: (a) learner-learner interaction, (b) learner-instructor interaction, (c) learner-content interaction and (d) learner-technology interaction. Besides, a qualitative approach was employed, aimed at triangulating quantitative data and interpret the findings more holistically.

Learner-learner interaction

This analysis of Items 1 and 2 regarding learner-learner interaction shows that 90% of the students agreed with the statement that using the flipped-class instruction enabled them to interact with other students either in the classroom or after the class. The Mean score (M = 4.45, SD = 0.767) of the study also indicates that a good

interaction has been well-established among students. The other item (Item 2) reveals that 93% of the students indicated that they were likely used the class activities for knowledge exchange with peers. The mean score (M = 4.48, SD = 0.811) also positively designated that the effect of learner-learner interaction benefited students in exchanging ideas with each other. The following Table 1 and Figure 2 summarized the results of students' peer interaction in the flipped classroom environment.

Table 1.
Descriptive statistics of learner-learner interaction

Items	Percentage					Mean	SD
Learner-learner interaction	**1**	**2**	**3**	**4**	**5**		
1. Using flipped classroom enabled me to interact with other students inside and outside the class	0	3	6	32	58	4.45	.767
2. I felt I learned a great deal from other students in this class	0	6	0	32	61	4.48	.811
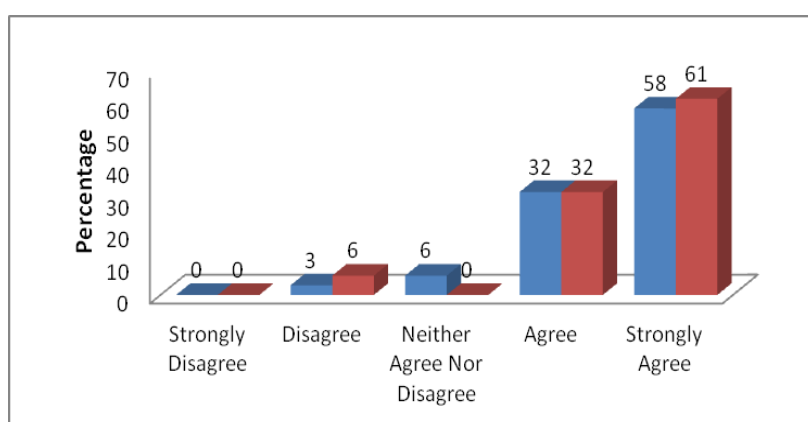
Figure 2. Percentage of learner-learner interaction

This finding confirms that the flipped-class instruction has successfully established students' social interaction with peers - enabled students to learn, teach, and exchange information with each other. Besides, the flipped-class instruction might allow low-ability students to learn in an environment in which they are more likely to be self-conscious and confident in their abilities. In particular, all students in the focus group discussion recognized that the flipped classroom environment had constructed their active interaction with peers either in-class hours or after the class. In line with this, one student argued positively: "*Yes, I agree, in this class [flipped classroom], I have a chance to talk and discuss with my friends not only in the class but also outside the class*".

This statement was supported by another student: "*What I like from this class is a group discussion, sharing knowledge and new information among us, and I think the class is not passive*". Besides, students' interaction was well-established not only in the class but also outside of the class hours. Some respondents noted how the flipped classroom enabled them to increase the amount of time to interact with other students outside of the class hours, for instance, one student declared: "*It is very helpful for us......we can practice our English not only in the classroom but also after the class online*".

Other students also acknowledged the same perceptions: "*...outside of class interaction is very useful for me especially to practice English with friends....and to discuss the lesson*". Furthermore, this instruction also improved class preparedness - enabled students to prepare questions at home and bring them to class for a discussion, one student verbalized: "*...now I can prepare many questions at home and ask them in the class during a discussion....*" Furthermore, asking questions and exchanging ideas were not the only ways for students to interact with each other in the flipped classroom. Student-student interactions also improved their understanding toward the subject they learned and discussed, for example, one student stated: "*We can pay more attention to other students' presentation, learn from them and understand the subjects easily*". This can be implied that knowledge exchange becomes a key issue concerning learner-learner interaction in the flipped-class instruction.

Learner-instructor interaction

Regarding learner-instructor interaction, Item 3 published that 64% of the students positively responded that the flipped-class instruction enabled them to interact with the instructor, either in-class hours or after the class. However, the mean score (M = 3.77, SD = 0.762) indicated that the students were not fully satisfied with the availability of instructor outside the class and the level of percentage was considered as moderate. Hence, it can be implied that learner-instructor interaction is much needed in the future of flipped classroom implementation.

Item 4 reported that 71% of the students believed that the instructor was patient in explaining concepts which were difficult to grasp. Likewise, the mean score (M = 3.80, SD = 0.792) also showed that the percentage of this item was moderate. For item 5, the data show that 90% of the students believed that feedbacks given by the instructor in the class improved their learning and understanding. In other words, students were able to understand the material which was difficult to grasp during the class activities (M = 4.45, SD = 0.767).

Further, item 6 showed that 81% of students positively responded that the instructor answered their questions in a timely fashion. The mean score (M = 3.90, SD = 0.746) indicated that the students were satisfied with the instructor's response to their questions. This finding confirmed that students and instructor interaction had been well-established through a give-and-take conversation. The following Table 2 and Figure 3 summarize the findings of student-instructor interaction in the flipped classroom with the percentage, mean and standard deviation (SD).

Table 2
Descriptive statistics of learner-instructor interaction

Items	Percentage					Mean	SD
Learner-instructor interaction	**1**	**2**	**3**	**4**	**5**		
3. The instructor was available outside of class time	0	3	32	48	16	3.77	.762
4. The instructor was patient in explaining concepts which were difficult to grasp	0	6	23	55	16	3.80	.792
5. The feedback given on my work helped me to improve	0	3	6	32	58	4.45	.767
6. The instructor responded to my questions in a timely fashion	0	6	13	65	16	3.90	.746
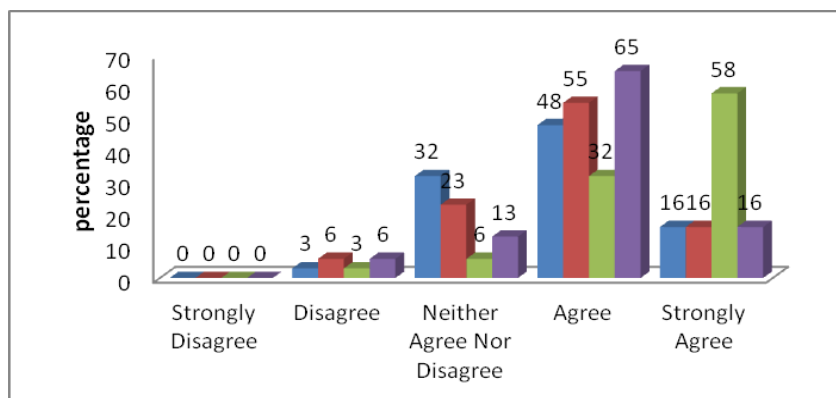
Figure 3. Percentage of learner-instructor interaction in the flipped classroom

In a group discussion, participants pointed their comfort and amusement of having times interacting with the instructor during the class hours. Some students verbalized that the instructor in the flipped classroom was able to talk personally to students and supplied immediate feedback for their improvement. Immediate feedback from the instructor enabled students to incorporate it into the learning process, as a student (S9) mentioned: "*When I make a mistake, she [lecturer] correct it immediately, but never says wrong to my answer, then she gives a suggestion for my improvement.*" Another student continued: "*Yes, we got a great advice directly for our improvement, so we know what to do, also, if we have some problems to complain, she will listen to us.*"

Another statement was then expressed by one student who compared her experience interacting with an instructor in a flipped classroom and traditional classroom, she asserted: "*This class makes me easy to talk to a lecturer in the class and it was very different with my previous class, only sitting and listening to lectures and we just stayed silently........I did not like asking questions because the lecturer would say "question is enough, now listening to my explanation of a new topic" But here, in this class [flipped classroom], we can ask and answer many questions."*

An interviewee who considered as a passive student noticed: "*She [lecturer] always interacts with us in the class, yeah, good lecturer, but less time to interact with her outside the classroom.*" While the other pronounced that formative assessment or daily quiz has helped them improved understanding toward the contents, he stated: "*She [instructor] always gives us direct feedback, so we know what we need to improve and what we already understand, we can ask her and she will explain very clear.*"

Learner-content interaction

The result of item 7 showed that 93% of students positively reported that they could easily interact with the video lessons outside the class by pausing, stopping and replaying the video according to their needs. Item 8 reported that 90% of students positively responded that they could easily take notes while watching the video lesson outside the class hour. The mean score (M = 4.35, SD = 1.050) also indicated that overall respondents had a positive attitude toward this item. The following Table 3 summarizes the finding of students - contents interaction in the flipped classroom with the percentage, mean and standard deviation (SD) and Figure 4 depicts a graph of students - contents interaction in English flipped classroom

Table 3
Descriptive statistics of learner-content interaction

Items	Percentage					Mean	SD
Learner-content interaction	1	2	3	4	5		
7. Using video lessons in flipped classroom enabled me to pause, stop, rewind and fast-forward according to my learning needs.	0	3	3	32	61	4.51	.724
8. Using video lessons in flipped classroom enabled me to take a note.	6	0	3	32	58	4.35	1.05
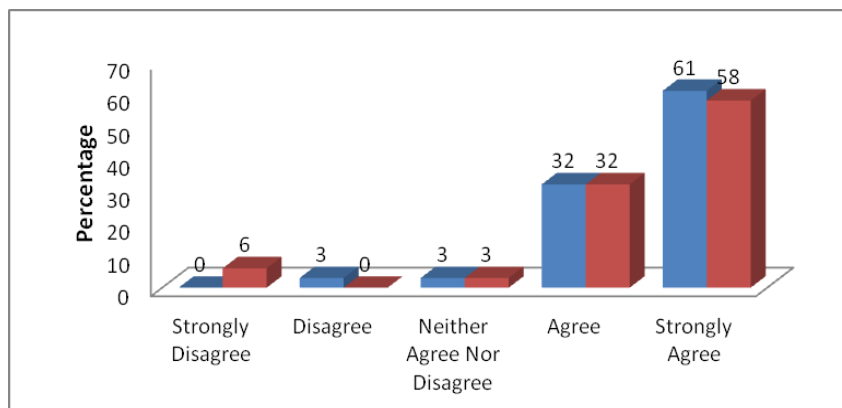
Figure 4. Percentage of learner-content interaction in the flipped classroom

From items 7 and 8, the researcher concluded that by interacting with the pre-class video lectures, the students were able to take notes, stop, pause, and replay the videos at their own pace. In a group interview, almost all students declared that they could watch the video in their own time and can make notes on it at their own pace – pausing and rewinding if they need to. In line with this, one mentions: "*Yes, we can stop and replay it according to our need, it can be twice, three times or four times.*"

In terms of students' engagement with the video lectures, one student noticed: "*I think the videos are good, not boring to watch, I could watch on my own way, write a note, pause and reply them when I don't understand.*" (S9) Other students mentioned that the duration of the videos lectures has a great impact on learner-content engagement. Some students stated that to engage students with the videos, shorter videos might be better than the longer one "*.....to me, the duration of the video is very important, too long duration is not good and tend to*

make students boring to watch, I think shorter and interesting video lectures is better" confessed one student. "*In my opinion, the video must be short and not too long, so, the students will not get bored to watch it*". Conversely, when we asked students who dislike watching and interacting with the video lectures outside of the class, one student replied and complained: "*I dislike watching the video lessons at home and I think the video should be in the classroom...no time to watch the video outside the class, I am too busy and I think it is better to watch the video in the classroom.*"

Learner – technology interaction

The researcher analyzed item 9-10 for learner-technology interaction. Item 9 reported that 87% of students positively responded that online technology made it more difficult to interact with the other students outside the class. The mean score ($M = 1.83$, $SD = 0.637$) also showed that the students had the strongest negative response or disagreement with the statement. In other words, by using technology tools, students believed that they could easily established their interaction virtually with classmates and instructor outside the class hour.

Item 10 also reported that 91% of students surveyed either disagreed or strongly disagreed that online technology made it more difficult to communicate with the lecturer. The mean score ($M = 1.74$, $SD = 1.728$) also showed the strongest negative response from students or disagreement with the statement. The researcher concluded that the students believed that using technology tools enabled them to easily interact with the instructor outside the class. The following Table 4 summarizes the finding of students – technology interaction in flipped classroom with the percentage, mean and standard deviation (SD) and Figure 5 also shows the finding of students – technology interaction in English flipped classroom.

Table 4
Descriptive statistics of learner – technology interaction

Items	Percentage					Mean	SD
Learner – technology interaction	**1**	**2**	**3**	**4**	**5**		
9. The online technology made it easier to interact with other students outside of the class	0	0	3	50	47	4.43	.568
10. The online technology made it more easier to communicate with my instructor	0	0	3	57	40	4.37	.556
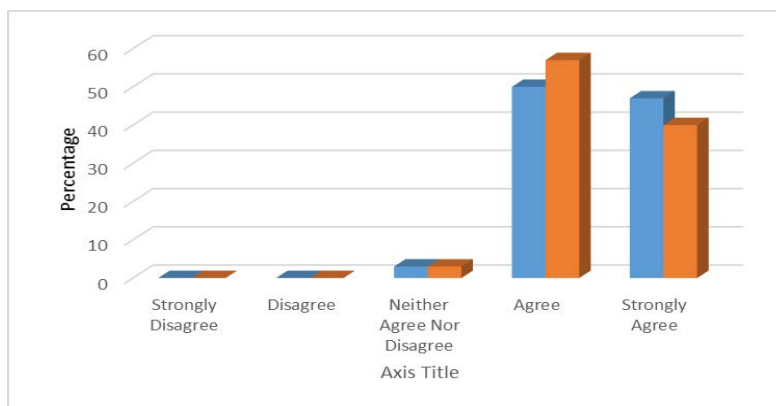
Figure 5. Percentage of learner – technology interaction in the flipped classroom

In a focus group discussion, students reported that they could easily access supporting learning materials outside of the class from numerous sources such as YouTube, VOA News, BBC News, or TED-Ed. One claimed: "*In this class, the instructor taught me to find various learning sources from the Internet such as YouTube videos*" While the other mentioned that she was able to be an independent learner and information seeker: "*Now, I know many learning materials that I can access and learn from YouTube video, BBC, and VOA....now I am able to learn independently outside of the class, I can be an independent learner.*"

CONCLUDING DISCUSSION AND RECOMMENDATIONS

This study summarizes that the flipped-class instruction has successfully constructed students' interaction in learning English subject. During instruction, students' peer interaction and students–instructor interaction activities were well-established in the discussion forum. Learner-learner interaction and learner-instructor interaction were found to be significant contributors to student learning and satisfaction in the flipped-class instruction. The interaction was not only well-established in the classroom but also outside of the class. Asynchronous discussion forums provided opportunities for students to interact with peers and instructor through online platform media outside of the class. Through peers' interaction, the students were able to learn from each other, and importantly, to ask new questions, which might well lead to new answers and discussions. Besides, in terms of learner-instructor interaction, the instructor had also successfully bridged the gaps between them in communication, particularly outside of the classroom. The instructor was also able to provide personal feedback for students' learning during the intervention process.

Furthermore, the interaction was also well-established between students and contents which mean that the students were able to interact with the video content at their own pace. They could take notes, pause, and replay the video content according to their needs. Bergmann and Sams (2014) mentioned that in flipped classroom environments, students not only watch the video but they are also able to interact with the video lessons. Besides, the students were also able to interact with contents either physically in the class or virtually outside of the class. The instruction then allowed instructors and students to interact with technology outside of a classroom context using Blogs. In terms of learner-technology interaction, some students also claimed that they are now able to be independent learners and information seekers. Enable to access more learning materials from a wide range of online resources such as YouTube videos, BBC News, VOA News, TED-Ed, or Khan Academy.

Positive perceptions of students' interactions in the flipped classroom were confirmed not only in the survey questionnaire but also in a focus group interview. The findings of this study confirmed the importance of each type of interaction on student learning. The study also in line with a theory of Moore (1989) and Hillman et al. (1994) that students' interaction in learning should cover four elements including learner-learner interaction, learner-instructor interaction, learner-content interaction, and learner- interface interaction, which addresses the relationship between the learner and the technology that is being used. This also supported by a statement Ariza and Hancock, (2003) that four elements of learners' interactions which is based on Moore's model should be integrated into teaching a second language (ESL) or a foreign language (EFL) subject. The integration of four elements of learners' interaction in learning a foreign language is essential to improving the quality of teaching and learning (Li & Zhu, 2013) and students' interaction in learning tasks will effect on students learning achievement (Kuo, Walker, Belland, Schroder, & Kuo, 2014).

Numerous studies of the flipped classroom and students' interaction have been reported in recent years (Kim, Kim, Khera, & Getman, 2014; Kong, 2014; Lai & Hwang, 2016; Love, Hodge, Grandgenett, & Swift, 2014; Roach, 2004; Zainuddin & Attaran, 2015; Zainuddin, 2017). For instance, Roach (2014) reported that students in the flipped learning class have interactively work in groups to solve problems and exchange ideas, the students also able to study on their own pace outside of the class hours. Other studies reported that students statistically improved in learning and mastering the subject by watching video lessons outside-of-class and having a small group discussion in-class activities (Kong, 2014; Zainuddin, 2017).

Besides, the researchers believe that the results of this study may contribute to better understanding of technology use in teaching-learning a foreign language. Numerous free learning materials can be accessed on digital resources. Richter and McPherson (2012) argued that in today's digital age, every student can access many free internet learning resources such as online video lectures. The students can watch these free online videos everywhere and at their convenience. Asfar and Zainuddin (2015) also stated that technology in education is an ever-evolving process and demands the students and instructor to always update the emerging technology in education in order to face the challenge of the 21st-century skills.

This study encourages English instructors to implement the flipped-class instructions in their teaching practices. This also will offer an opportunity to reform the way of their teaching practice from being teacher-centered to one which is more student-centered. Also, this instruction is significant to foster students' self-directed learning skills outside the classroom, and hands-on activities in the classroom. Missildine, Fountain, Summers, and Gosselin (2013) mentioned that blending of new technology and traditional classroom into a single study, or the so-called flipped classroom, may establish students' interactive learning activities, and at the same time promote a student-centered learning environment.

Although this study reported students' interaction in learning English in the flipped classroom, several issues should be taken into consideration for future research. A Moore-theory and empirical perspectives of the flipped classroom should be further explored more fully. Further study should employ a more interactive environment for teaching and learning English with different settings and instructions. Further study should also explore other learning variables including motivation, engagement, and achievement with a larger number of samples or participants.

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SOCIAL MEDIA TECHNOLOGIES AND HIGHER EDUCATION: EXAMINING ITS USAGE AND PENETRATION LEVEL AS EDUCATIONAL AIDS IN INDIA

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Abstract: Social media platforms have become an indispensable part of people's lives in the digital era. Correspondingly, the educational spectrum is also foreseen to experience various pedagogical transformations owing to the continuous rise in the usage of web 2.0 tools across the globe. The expanding thesaurus of social media applications (Social Networking, blogs, wikis, hashtagging, etc.) is observed to aid the growth of several informal pedagogical channels that can foster the development of networked, collaborative and constructive virtual learning environments.

In order to gain a better understanding regarding the educational value of the web 2.0 technologies, the present study aimed to identify the reception and usage of various social media platforms in the educational context. It proposed to analyze the extent to which social media channels are being utilized for the purpose of knowledge sharing, knowledge creation and knowledge acquisition. An extensive survey was conducted among the faculty members of Tamil Nadu in India - a state known for its high academic output.

The study showcased that the penetration level of social media platforms among the higher educational institutions in Tamil Nadu is still in its infancy. Though a large number of faculty members are currently employing these platforms for gathering and sharing educational information and resources, only a very few were contributing new learning resources/content back to these platforms.But even in its infancy, the growing adoption of the social web by faculty members has initiated a revolution in the contemporary educational landscape thereby providing more enhanced learning experiences for the students.

Keywords: Social Media; Higher Education; Faculty Usage; Knowledge Sharing; Knowledge Creation; Knowledge Acquisition.

INTRODUCTION

Information and Communication Technology (ICT) and Social Media platforms are identified as the two core necessities of the millennials in the present era (Committee of Inquiry, 2009). The explosive growth in the popularity of the social web (Lenhart, Pureett, Smith and Zickuhr, 2010) has been marked as one of the principal phenomena of the Digital Age. According to the 'Digital in 2016' report – a report containing statistical insights from the extensive data collected from various countries across the globe - there are currently 2.3 billion active social media users (We are Social, 2016). India is observed to be the third largest Internet users' base - 317 million - in the world next to China and the United States of America (IAMAI, 2015). Moreover, India has over 143 million social media users (IAMAI, 2015) of which 136 million falls under the active user category (Internet World Stats, 2016). This enormous proliferation of social media platforms has influenced and transformed many major sectors (Governance, Commerce, etc) in the country including education.

Computers influencing the conventional educational systems were foreseen by educational researchers as late as the 1990s. For instance, Tapscott (1998) claimed that students of the Net Generation will be entering their classrooms expecting to be exposed to a Technology Enhanced Learning (TEL) environment. As predicted by various educational researchers, several studies (Mazer et al, 2007; Paul et al 2012; Dyson et al, 2015) have shown that social media outlets have penetrated and are continuously renovating the modern educational landscape into a more networked, collaborative and constructive one.

SOCIAL MEDIA AND LEARNING

Though initially developed for communication purposes, social software such as social networking sites, wikis, blogging or microblogging sites and media sharing sites tends to hold huge educational value (Tess, 2013; Gao, Luo and Zhang 2012; Manca and Rameri, 2013). Liburd and Christensen (2013) stated that social media outlets allow learners to engage themselves in an active, collaborative and in-depth learning process. Studies (Lundin, 2008; Miyazoe and Anderson, 2010; Robertson, 2011) have shown that social publishing sites which support User Generated Content (UGC) act as interactive virtual environments ideal for networked and social learning practices(Hajli and Lin, 2014). Students are observed to have a positive and an enhanced learning experience when interactive blogs or microblogs were included in their academic functions as it encouraged active participation and expansion of learning resources (Gao et al, 2012). Similar to blogs, wikis can assist in collaborative knowledge creation process, a feature that can be used by the teachers and students to keep a continuous track on their work (Parker and Chao, 2007).

McCarthy (2010) advocated that Facebook serves as an ideal platform for hosting learning programs, especially blended learning programs. YouTube is yet another popular social media outlet that has been experimented with its educational potential. The rich visual content present in YouTube was observed to be effective in learning activities or for learning complex subjects such as the human anatomy (Jaffer, 2012). In Addition to enhancing learning experiences, Social media tools also aid in combating students' anxiety issues that might occur while raising doubts or question in real-life classroom settings (Wheeler et al, 2008).

SOCIAL MEDIA AND HIGHER EDUCATION

The millennial generation is currently witnessing a continuous increase in the research dealing with the applications of social media tools in varied higher educational settings (Dyson, Vickers, Turtle and Cowan, 2015; Davis et al 2012; Tess 2013). Embedding social media technologies within an academic setup has been primarily associated with social-cultural learning theories (Liburd and Christensen, 2013). According to Hung and Yuen (2010), social networking sites such as Facebook or Twitter can act as aids in supplementing conventional classroom lectures. These social tools were identified to enhance the overall students' learning experiences. In addition, the use of social media platforms in colleges for educational purposes has been perceived to increase the students' satisfaction and participation level (Hamid et al, 2015) and also decrease the anxiety levels of the students within the conventional classroom environments (Wheeler et al 2008).

While studies focusing on the student's perspective of social media use for educational activities are found in abundance, studies concentrating on the teachers' or faculty members' perception regarding the pedagogical application of social media tools are less in number and are rare to be found. According to Moran et al (2012), faculty members are generally very cautious and choosy regarding their online social identity and presence. Facebook was identified as the most popular social media channel among higher education faculty members, especially to keep in touch with their personal connections and to get updates. In the case of professional identity management, LinkedIn was the most opted social media outlet. Blogs and wikis were preferred by them for engaging themselves in teaching and educational activities. Though faculty members tend to hold a positive attitude towards the pedagogical applications of the social web, the socially constructed image/opinion regarding social media platforms as 'entertainment outlets' serves as the primary obstruction in using these technologies within classroom environments. Secondary factors of obstruction include the fear of distraction (Philips, 2011), privacy (Rambe, 2013), and credibility issues.

The present study aims to analyze the reception and penetration of social media technologies within the Indian higher education classrooms. Also, the study indents to examine the faculty members' opinion in employing the social web an instructional/educational aid.

METHODOLOGY

An extensive survey was conducted among the faculty members belonging to the state of Tamil Nadu for the current study. Tamil Nadu – one among the eight Indian states having the largest number of higher education institutions - was chosen as the research area. A three-stage random sampling design (Multistage sampling) was employed to identify representative samples for the study. Initially, all the 32 districts of Tamil Nadu were categorized in four

zones - North, South, Central and West – and five districts from each zone were selected at random. Secondly, a list was developed compiling the details of all the institutions belonging to the district that have been selected and five colleges from each selected district were included for the study. Finally, for each selected institution, a database was created accumulating information regarding all the faculty members affiliated with it and random number generator was used to select the samples (faculty members) that are to be included for the study. In this fashion, a total of 1000 samples were approached for the survey from which 725 valid responses were collected.
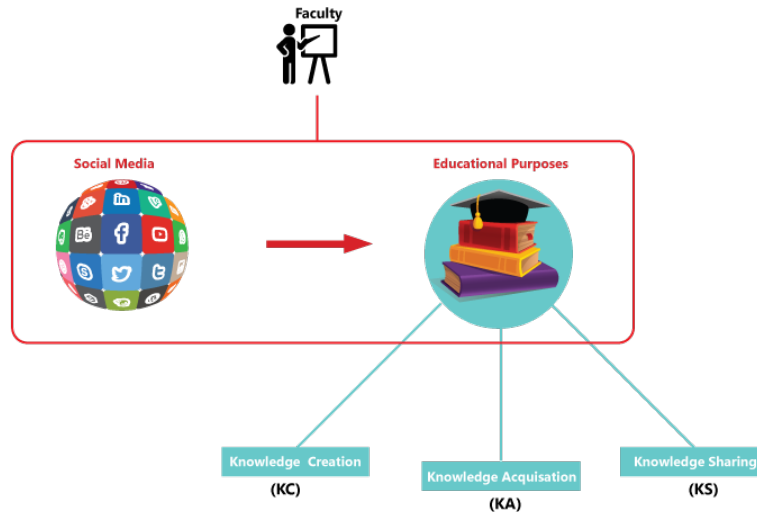
Figure 1. The framework of the present Study

Recently the developments in the global economy has been emphasizing the importance of Knowledge Management in both the academic and the business sector (Jaleel and Verghis, 2015). The emergence of the social web has modified the conventional educational process into more knowledge and information oriented one. Hence it is crucial to use knowledge-based constructs to analyze the reception and usage of social media platforms in an academic perspective. Knowledge Creation (KC – creating new educational content by posting/publishing one's understanding, viewpoint, information, opinions or questions), Knowledge Acquisition (KA - acquiring new skills, information or understanding) and Knowledge Sharing (KS – sharing information and learning resources using online social platforms) were the three main constructs that were used to design the research instrument (Figure 1). The reliability and the internal consistency of the items (questions) used to measure the constructs were assessed using Cronbach's alpha coefficient. The questionnaires had an alpha value of .76 relatively high to the accepted reliability value of .70 (George & Mallery, 2003).

ANALYSIS AND INTERPRETATIONS

The faculty members who responded to the survey questionnaire contained 55% of male respondents and 45% of female respondents. Based on their academic titles, the respondents consisted of 71% of Assistant Professors, 15% of Associate Professors, 10 % of Professors and the rest were visiting faculty, lecturers and teaching assistants. Other than a few, most of them were active internet users - 63.5% claimed that they browsed the web and used online social applications more than five times a day. Almost 50% of the respondents stated that they regularly accessed the web in their workplace (colleges) during their break time or free hours. Facebook (61.5%) was the top social media platform used by the faculty members in the major higher educational institutions in Tamil Nadu. Next, to Facebook, Google Scholar (55.8%), LinkedIn (50%), Google+ (48%) and YouTube (40.4%) were the popular social media choices of the respondents. Almost 77.3% of faculty members were unaware of Stack Exchange (a collaboratively editable question and answer site focusing on various educational streams), and 63.6% were not aware of the existence of Quora (a question and answer site where questions including educational questions are posted, answered, edited and organized by its users).

KNOWLEDGE ACQUISITION

Knowledge acquisition is operationally defined as the process of acquiring and adding new information to the existing knowledge for refinement or enhancement (McNamara and O'Reilly 2002).
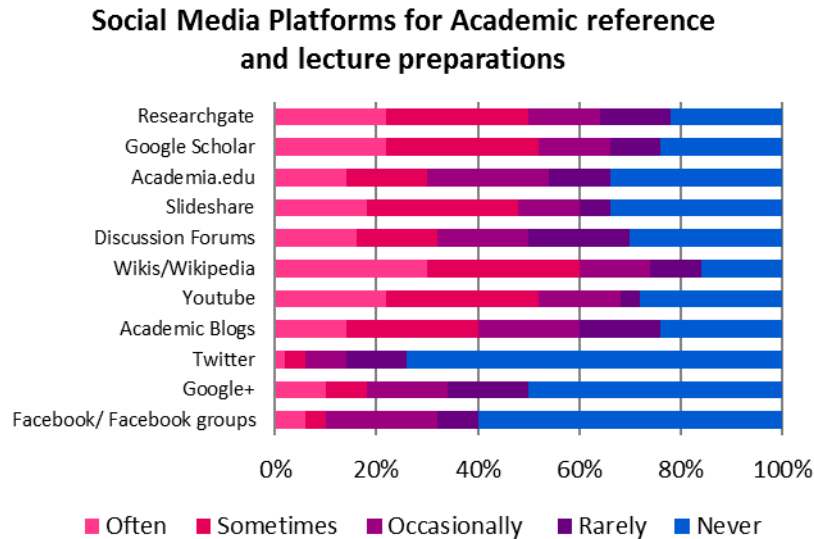
Figure 2. Faculty using Social Media Platforms for Academic reference and lecture preparations

On an average measure, 88% (18% - often, 48% - sometimes and 22% - occasionally) of the faculty members stated that they acquire new information (with educational value) through social media platforms (in addition to other conventional information sources). Only 4% responded that they never used these platforms for acquiring knowledge. Almost 78.9 % (13.5% - often, 25% - sometimes and 40.4% - occasionally) of the respondents have found the information posted on social media platforms to be 'usefulness' for their lecture preparations. 25.5% of the faculty claim that they always search social media outlets for content/information to further enhance their understanding regarding a particular topic. Based on the functionality, Wikipedia/ Wikis (30%), ResearchGate (22%), Google Scholar (22%) and YouTube (22%) are the top sites that are often used by the faculty members for lecture preparations and for referring educational content (Figure 2).

KNOWLEDGE CREATION

According to Communal constructivist approach (Holmes et al, 2001), learners not only learn actively by constructing new knowledge (Constructivism) as a result of their online interactions and connections (Social Constructivism) but they also collaboratively create knowledge for their learning community. Based on Communal Constructivism theory, knowledge creation for the present study can be defined as an act of creating and posting/publishing/adding any new educational content (User Generated Content) in online social platforms for the benefit and reference of others - an online network of learners/friends/followers or Subscribers.
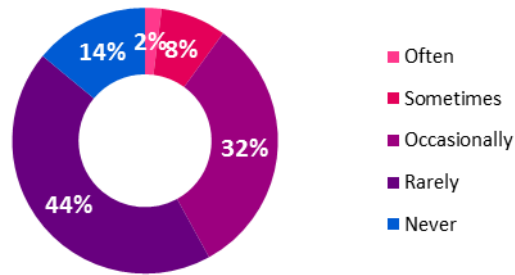
Figure 3. Faculty using Social Media Platforms for Knowledge Creation (KC)

Based on the knowledge Creation construct measure, only 2% of the faculty members from higher educational institutions in Tamil Nadu showed high interest in posting their own educational resources/content online (Figure 3). Though almost 74.5% of the respondents claimed that they have never faced any copyright issues while posting their educational content online or while using online learning resources; only 1.9% claimed that they were regular and active in social publishing sites such as online academic discussion forums, question and answer sites, academic blogs etc. Synonymous attitude prevailed in encouraging students to post their content/opinion/ questions online. Only 3.8% of the respondents supported such activities among their students. Almost 36.5% of the faculty surveyed were unaware that they could contribute content to Wikipedia or academic wiki pages. Only 4% of the respondents stated that they actively publish their learning resources in wiki platforms. It is also important to note that only 7.7 % of faculty members encouraged regular online interactions (such as subject related discussions or clearing doubts etc.) with their students through social media platforms.

KNOWLEDGE SHARING

According to Bukowitz et al (1999), Knowledge sharing is represented by any activity through which existing knowledge (such as information, skills, or expertise) is exchanged among people (such as friends, families or acquaintance) or communities or organizations. Derived from the above definition, Knowledge Sharing for this study is operationally defined as an act of sharing existing information (via links or text or multimedia content) through one's social media profile/page in order to expose the information to others present in their online network of learners/friends/followers or subscribers.
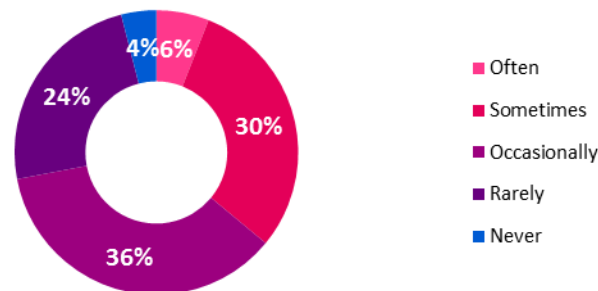
Figure 4. Faculty using Social Media Platforms for Knowledge Sharing (KS)

From the above pie chart, it can be inferred that around 72% of the respondents (6% - Often, 30% - Sometimes and 36% - Occasionally) share learning resources through social media outlets. 33% of the faculty members surveyed were not comfortable in openly sharing educational content online (Figure 4), but almost 66% were willing to share

them in online private settings such as groups or through private messages. Similarly, only 7.7% of the faculty members encouraged their students to read and refer educational resources posted on social media platforms.

RELATIONSHIP BETWEEN KNOWLEDGE ACQUISITION, KNOWLEDGE CREATION AND KNOWLEDGE SHARING

Correlation Analysis was conducted to identify the relationship between the three major constructs analyzed in the current study. According to Table 1, it can be inferred that all the three constructs – Knowledge Creation, Knowledge Acquisition and Knowledge Sharing have a significant correlation with one another but the intensity of the relationship varied.

Table 1. Correlation table of Knowledge Creation, Knowledge Acquisition and Knowledge Sharing

	Pearson Correlations		
	Knowledge Creation	Knowledge Acquisition	Knowledge Sharing
Knowledge Creation	1	.579**	.829**
Knowledge Acquisition	.579**	1	.705**
Knowledge Sharing	.829**	.705**	1

**. Correlation is significant at the 0.01 level (2-tailed)

The Correlation table (Table 1) indicates that the strength of linear association between Knowledge Creation and Knowledge Sharing is very high with an 'r value' of 0.829. Additionally, simple regression analyses were conducted to further analyze the dependence and relationship between three constructs examined in the present study. According to regression table below (Table 2), it is evident that 68.1% (adjusted R^2 value) of the variations that occur in Knowledge Creation can be attributed to the Knowledge Sharing behavior of the faculty members. Also, 48.6% (adjusted R^2 value) of the variations that occur in Knowledge sharing can be linked with the Knowledge acquiring behavior of the faculty members.

Table 2. Regression Analysis of the constructs

Constructs examined	R^2 (adjusted R^2)	β value (t-scores)
Knowledge Sharing → Knowledge Creation	.688(.681)	.829 (10.278)***
Knowledge Sharing → Knowledge Acquisition	.497(.486)	.705 (6.882)***
Knowledge Acquisition → Knowledge Creation	.335(.321)	.557(4.918) ***

SOCIAL MEDIA PLATFORMS AS A LEARNING TOOL

The respondents were asked to rate popular social media platforms on a five-point Likert scale based on their potential of being employed as learning aid. Almost 52% of the faculty gave a high rating to Google Scholar for having the potential to be used as a learning tool (Figure 5). ResearchGate (46%) was the second highest rated

platform. Wikipedia (36%) and YouTube (36%) were valued next to ResearchGate, while Twitter was rated the least (10%) in possessing the ability to function as a learning tool.
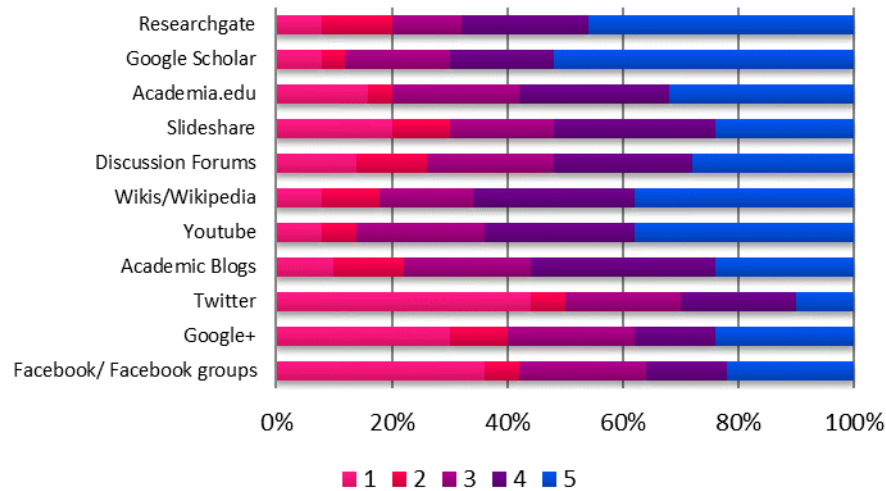
Figure 5. Faculty's rating based on the potential of social media platforms to be used as a learning tool

SOCIAL MEDIA FUNCTIONALITIES ESSENTIAL FOR EDUCATIONAL ACTIVITIES

Simth (2007) developed the honeycomb framework which constituted the seven key building blocks of social software - Identity, Presence, Relationship, Conversations, Groups, Reputation and Sharing. These blocks are neither mutually exclusive nor do they all have to present for the efficient functioning of a particular social media platform. According to the framework, Identity denotes the virtual appearance of a user present in the social web (such as profile names, profile photos or 3D avatars); Presence indicates the accessibility of a user within the online social environment (Example: Online/Offline status); Conversation signifies any communication process that can occur between the users within the social web (including features such as private messaging, chatting, commenting, etc.); Relationship represent the connections between the users; Reputation showcases the credibility or trustworthiness of a user or content present online (such as number of subscribers or followers); Groups represent the functionality that enables the users to form online communities and finally, Sharing symbolizes any act of user-generated content being published/posted/shared on the social web. Based on the purpose and theme of the social media platform the importance given to the seven blocks may differ. For instance, according to Kietzmann et al (2011) sharing was the primary block focused on YouTube whereas Identity, Reputation and relationship were the primary blocks concentrated in LinkedIn.
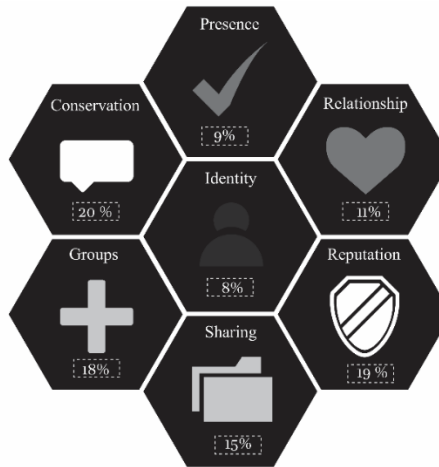
Figure 6. Honeycomb framework of social software for an academic social media platform

Similarly, for the present study, responses were collected to identify the core functionalities needed to be incorporated into an educational social media platform. The above figure (Figure 6) denotes the nature of Gene Smith's honeycomb framework after inputting the faculty members' requirements and preferences. According to faculty surveyed, Reputation tends to hold prime importance for any social platform built for instructional/academic purposes. Conversation, Sharing and Groups can be categorized as the secondary blocks of importance next to Reputation. While Identity and Presence tend to have the least significance in an academic social media platform.

CONCLUSION

The present study provides an overview regarding the reception and usage of the social media among the academic staff members for educational purposes. It is evident from the study that the penetration and reception of social media platforms in the higher educational institutions in Tamil Nadu are still in its infancy. Though a large number of faculty members are currently employing social media tools for gathering and sharing educational information and resources, only a very few were contributing resources back to these platforms. Even in its infancy, social media platforms are observed to renovate the contemporary educational landscape as the faculty members are actively adopting modern social tools for enhancing the learning experiences of their students. Knowledge Sharing and Reputation (Credibility) were the main factors that were emphasized as the primary requirements in an academic social media platform. Overall, the faculty members showed a positive attitude towards the educational use of social media platforms. But the lack of awareness regarding the true educational potential of the social web noted among a section of the faculty can act as a barrier in influencing the usage of social media platforms in academic settings.

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STUDENT SATISFACTION AS DETERMINANT OF ACADEMIC SUCCESS OF DISTANCE LEARNERS: A STUDY ACROSS DISTANCE LEARNING COURSES

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Abstract: Distance learning programs gives opportunity for higher education to all who are otherwise not able to enrol on-campus due to various reasons but seeks knowledge. Being the heterogeneous group, distance learners' may have different expectation from distance learning system which consequently may affect their success in distance learning. This study was planned to find out the influence of learners' satisfaction in distance education in determining academic success of distance learners in undergraduate, post-graduate and professional courses. For the purpose, sample of 493 distance learners was selected from these three categories of courses and administered with Student Satisfaction Scale which had six dimensions. The findings of the study indicated that student satisfaction was a significant determinant of academic success of distance learners across the courses but different dimensions of student satisfaction were found to be related with their success in undergraduate, post-graduate and professional courses.

INTRODUCTION

Distance education open the doors of higher education to all those who are otherwise not able to enrol on-campus due to socio-economic conditions, family circumstances, physical disabilities, geographical barriers or those who drop-out from the conventional systems for some reasons. Garrison and Shale (1987) write that the distinguishing feature of distance education is that it can "extend access to education to those who might otherwise be excluded from an educational experience". For such students distance education offers a flexible learning setting in terms of time and location.

Students in distance education spend considerable time and money; as well as exert substantial effort to obtain education thus expect successful course completion. Being heterogeneous group with diverse backgrounds these learners may have their own expectations from the learning process in distance education. There may be differences in how these learners view the learning process in distance education and prefer it to take place. Jaffee, (1998) espouses that many of the learners may seek learning conditions similar to traditional classrooms since they are familiar and comfortable with the face-to-face, instructor-centered classroom experience, which minimizes the students' responsibility for their own learning. But, distance learning is very different from traditional on-campus learning in terms of social and psychological learning environment and its pedagogical components. Many distance learners feel bad when instructors did not participate in discussions or responded to questions within a very limited time (Zhang & Perris, 2004). Similarly, Yang and Cornelius (2004) found that students became frustrated when their courses were poorly designed. Many other factors, such as the infrastructure, quality of content, support systems, assessment, and peer support may influence their learning experiences (Arbaugh, 2000; Areti, 2006; Bender, Wood, & Vredevoogd, 2004).

Sahoo (1985) believe that academic and economic factors mostly motivated students to join their studies whereas instructional factors, management factors, utilitarian factors and personal factors come in the way of completion of courses. For this matter the distance learning format may not be satisfying to all the students (Carr, 2000; Rivera & Rice, 2002). These aspects may pose a lot of challenges for the academic success of distance learners.

For their success, besides, owning the responsibility, the distance learners expect effective support and services from the distance education institutions as cited by Major and Levenberg (1999) "the successful mastery of academic content, once viewed entirely as the learners' responsibility, is now considered a shared responsibility between three major players: the student, the instructor, and the educational institution. Moreover, the rising demand and growing consumer experience with flexible education programs to support career development and lifelong learning has

increased people's expectations for quality instruction, effective educational outcome (Debourgh, 1999). The quality of all aspects of the educational program reflects from learners' satisfaction and educational outcomes i.e. success of distance learners may depend upon how they feel about the different aspects/ components of distance education and (Sloan, 2011).

Therefore, it becomes imperative to investigate those aspects of distance education which satisfies them and consequently influence their academic success so as to make distance education effective for learners. The literature (Levin & Wadmany, 2006; White, 2005) also emphasizes the importance of research into student learning for professional practices of course designers and for improving students' distance learning experiences.

Student satisfaction in distance education
Student satisfaction has long been recognized as a "core element for higher education institutions serving traditional-age, on campus students" allowing institutions to "strategically and tactically target areas most in need of immediate improvement" related to academic, registration and customer service areas (Noel-Levitz, 2006). According to Elliott and Healy (2001), student satisfaction is a short-term attitude based on an evaluation of their experience with the education service supplied. Moore and Kearsley (1996) opine that students feel satisfied when they are pleased with their experience with different components of distance education and consequently their satisfaction becomes important indicator of learning as also endorsed by Horvat, Krsmanovic and Djuric (2012).

There are certain components of distance learning that are its integral parts and the course material is most important of these because this is the main source by which teachers connect with remote students who study at home. The well designed course material constitutes the mainstay of the system and satisfaction of learners with course material is most crucial for effectiveness of distance education programme. Besides course material, Personal contact programmes (PCP) are regarded as an added feature of traditional distance education in the form of lectures, tutorials, seminars and discussions. Singh, (1995) cites "the personal contact programmes through intensive classroom instruction, individual guidance and counselling help in giving a proper orientation to the students, add to their motivation, encourage regular study habits and instil confidence in them". Teachers' behaviour during PCP or otherwise also may determine the satisfaction of learners in distance education as their availability and willingness to help the students to resolve their academic queries may lead to pleasing experiences. In addition to academic support, the administrative support is equally important because issues and concerns related with admission, enrolment, examination and results are sorted out by administration. Thus administrative support may also contribute towards explaining students experiences in distance education. As these aspects form the backbone of distance education system therefore learners' experiences about these may be key to their success.

In literature of distance education, these factors along with some other factors have been found to constitute the student satisfaction. Satisfaction of distance learners for Print material, contact classes, evaluation system, (Reddy, 1994; Srivastva, 1995) course utility and administrative services (Kaur, 1995) have emerged as important factors for determining student satisfaction.. Inman, Kerwin and Mayes (1999) found that support materials provided by the instructor were the most important factor correlated with student satisfaction. Besides, interaction with instructors, active discussion among course participants and clarity of course design relates with students' satisfaction (Swan, et al., 2000). Gallogly, (2005) revealed that administrative services being accessed by learners were providing a high level of satisfaction. Phipps and Merisotis (1999) opined that providing student support for access to institutional resources and responsiveness from the teachers may be a determinant of student satisfaction in distance learning. Valasidou and Bousiou (2006) advocated importance of interaction in student satisfaction. According to them, distance learners' satisfaction include information about the modules and other introductory and personal discussions and mainly upon the level of effectiveness of these meetings with the instructor and, specifically, the issues that are discussed during the meetings. Powell (2007) gave a another set of factors, namely, clarity and accuracy of information regarding course objectives, requirements and grading procedures, consistency of grading with stated criteria, usefulness of assignments and activities for learning and understanding subject, reasonableness of instructors expectations concerning course work, preparedness of instructor and presentation of the subject which may be used to assess the students' perception about course and teacher effectiveness. Colorado and Eberle (2010) precisely gave three elements of student satisfaction which included course offerings, student and faculty support services and allocation of resources. Tinto (2011) proposed four aspects i.e. expectation, support, assessment and feedback, and involvement which cause persistence which led to success in distance learning system. Sandhu and Kappor (2014) found student's satisfaction in terms of instructor support, student's interaction, student autonomy. Adapa (2015) propounded that innovative teaching resources, assessment tools and feedback systems foster

students' overall satisfaction. Khan and Iqbal (2016) revealed that learner-content interaction and Learner- Instructor interaction were significant predictors of general satisfaction.

Student satisfaction with distance learning courses is thus a key aspect to measure the effectiveness of distance learning (Levy, 2003). Researchers (Keller, 1983; Pike, 1993) espoused that the more students are satisfied, the more likely they are to do well in the course. Biner, Dean and Mellinger (1994) contended that student satisfaction played an important role in determining the success of distance-education courses. High satisfaction leads to lower attrition rates, higher persistence in learning, and higher motivation in pursuing courses (Allen & Seaman, 2008; Schreiner, 2009).

Rationale of the Study

Students' success is vital for any institution to sustain itself (Atchley, Wingenbach & Akers, 2013). Moreover, out of the aims of education, the academic success of a student continues to be the primary concern and the most important goal of education. In case of distance education it has become even more crucial to study the factors contributing towards learners' success because distance learners faced a lot obstacle in terms of achieving success in their learning (Aderinoye, 1992). Thus, it becomes imperative to be aware of student satisfaction with distance-learning courses and see how it shapes up the academic success of the distance learners.

Though a number of studies are available as mentioned above which evidenced that student satisfaction has a positive influence on success of the students but in these studies either a few aspects of satisfaction were taken or the course coverage were limited. i.e. either undergraduate or postgraduate or professional students were taken. No study was found wherein academic success of learners pursuing different types/categories of courses was examined in relation to their satisfaction in distance education.

In the present study, the rationale behind taking these three groups of courses separately lies in the fact that the learners' profile at three levels of course is altogether different. The students at undergraduate level come from school system and are novice in higher education system and most of them are new in distance education too. This transition may pose more challenges for them in the system. Therefore, investigation of the dimensions of their satisfaction in distance learning is very important so as to know which factors facilitate them in getting success and cause failure. In case of distance learners in postgraduate courses, they have learning experiences of higher education system as well as many of them already may have acclimatization with distance education system but this group is comprised of many employed persons and others unemployed (especially females) who could not pursue their education in regular mode. Due to their experiences and different sets of aspirations, their expectations from distance learning may be different which consequently determines their success. Talking about professional courses, here most of the learners are employed which is pre-condition to enter in most of these courses. These students have goal clarity and high expectations from the course as they enter professional courses after a tough competition as seats are limited in professional courses. These attributes of learners in professional courses may entail for certain services of distance education and their satisfaction for these may decide about their success in distance education. Besides these there could be a number of other intervening variables which may be affecting their satisfaction in distance education and consequently their success. Keeping this in mind it was felt that the issue needs to be analyzed. With this background, the study was conducted with following objectives:

OBJECTIVES
- To determine the differences in student satisfaction between successful and unsuccessful distance learners in undergraduate, postgraduate and professional courses.
- To examine the correlation between student satisfaction and scores of successful distance learners in examination of undergraduate, postgraduate and professional courses.
- To find out those aspects of distance education for which satisfaction of distance learners relate with academic success of the learners across the courses i.e. undergraduate, postgraduate and professional.

METHODOLOGY

The focus of the study being on determining the relationship of student's satisfaction in distance education with their academic success across the courses, three major categories of courses, namely, undergraduate courses, post graduate courses and professional courses were included. Keeping the intent of the study in view, descriptive method was employed involving comparisons and relationships.

SAMPLE

The participants of the study were taken from Distance learning department of Panjab University Chandigarh who were pursing undergraduate, post-graduate and professional courses in year 2013-14. A total of 493 distance learners were selected by employing Multi stage sampling technique At the first stage, by simple random technique (i.e. lottery method) the courses under three categories were selected. Amongst undergraduate courses, Bachelor of Arts as well as Commerce were chosen and from four post-graduate courses (Masters of Arts in History, Political Science, Public Administration and Sociology) were selected. Out of various professional courses, two courses, namely, M.Ed. and M.B.A. were selected.   After selecting these courses, at the second stage, the sample of students from the courses were drawn by non-random sampling method. Purposively, the students of second year of distance education courses who came to attend the Personal Contact Programmes were selected because these students had experienced the services offered by the distance education institution. A total of 191 Undergraduate students, 193 Postgraduate students and 199 Professional students completed the Student Satisfaction Scale. Amongst these students, semester/year end examination was declared for 493 students (which included 165 Undergraduate students, 157 Postgraduate students and 171 Professional students) and remaining 90 students either dropped the examination or the result was not declared due to some reasons (like lower class result, any other such default). Thus, the final sample of the study included 493 students in total who completed Student Satisfaction Scale and had semester/year-end result (either pass or fail, if pass then marks obtained).

Data Collection Instrument

Student Satisfaction Scale

In the present study, Student satisfaction was conceived as level of contentment of learners with distance education services offered during the course i.e. starting from the entry till completion of the course and perceived significance of this education. Therefore, six important aspects of distance education, namely, Administrative support, Learning Material, Teachers' behavior, Personal contact programme (PCP), Evaluation System and Usefulness of course, were taken as the major factors/dimensions of student satisfaction. A five point scale was constructed to assess the student satisfaction on these six dimensions of distance education with response options as Very much satisfied, Satisfied, Not concerned, Unsatisfied and Very much unsatisfied.

Content validity was found out with experts' opinion and item validity was determined by employing item analysis technique. Point biserial coefficient were calculated to ascertain the discriminatory power of the items of the scale, and the items with pbr .254 or more were retained in the final scale. The reliability (internal consistency) of the 'Student Satisfaction Scale', was found out by using Cronbach's alpha. Kline (1999) rule was adopted to determine acceptance of values of Cronbach's α for each dimension of the scale. The values are given below:

Dimensions of the Scale	Cronbach's alpha	Internal Consistency
Administrative Support	.778	Acceptable
Learning Material	.847	Good
Teachers' behavior	.706	Acceptable
Personal contact programme	.903	Excellent
Evaluation System	.853	Good
Usefulness of the course	.751	Acceptable

These values indicated towards the internal consistency of the Student Satisfaction Scale. The final scale consisted of 40 items which were distributed in six dimensions.

Official Records for Academic Success

In the present study, academic success of the distance learners was considered at two levels. Firstly, success refers to *getting through the semester/ year* end examination in first attempt i.e. passing the examination successfully. The learners who passed the examination were grouped as *successful learners* and those distance learners who either got reappear in examination or got failed were considered as *unsuccessful.* Thereafter the *level of success* of successful learners was taken in terms of the marks obtained by the successful learners in their semester/ year end examination. This data about students' academic success was obtained from the official records of the distance education institute.

Data Analysis Techniques

t-test technique was used to see the significance of difference between successful distance learners and unsuccessful distance learners (separately for undergraduate, post-graduate and professional courses) in their satisfaction whereas Product moment correlation was worked out between marks obtained by the successful students and the scores on students' satisfaction scale for determining if the satisfaction emerges as the correlate of achievement level of distance learners. The minimum level of significance was fixed at 95% confidence limit. The 95% confidence level was marked with * and 99% level of confidence with ** in the results of t-test and correlation.

DELIMITATIONS

The study was delimited to:

1. The study was delimited to one distance learning institution only which offer print based correspondence education mainly.

2. Satisfaction was studied with respect to only six major dimensions (administrative support, learning material, personal contact programme, teachers' behavior, evaluation system and usefulness of the course) of aforementioned distance education system.

3. The sample was selected from those learners who came to attend the personal contact prograame.

RESULTS

The sample consisted of 60% females and 40% males, out of which 70% were married and 29% unmarried and 1% divorced. Among these 36% belonged to rural areas and 64% from urban localities and 25% of them had full time employment, 21% were employed as part time workers and 54% were unemployed.

With regards to academic success, it was found that 165 Undergraduate students included 127 successful students and 38 unsuccessful. Among 157 students in Post graduate courses, 117 were successful and 40 were unsuccessful students whereas out of 171 students from Professional courses whose results were declared 132 became successful and 39 remained unsuccessful.

To examine the relationship between distance learners' academic success and their satisfaction, the difference in the satisfaction of successful learners and unsuccessful learners was found out in all the three types of courses i.e. undergraduate, post-graduate and professional. Subsequently, degree of correlation between marks obtained by successful learners in their semester/year-end examination and their scores obtained on the Student Satisfaction Scale was ascertained.

Relationship between academic success and satisfaction of distance learners in undergraduate courses

The scores obtained by successful and unsuccessful students on satisfaction scales were compared by employing t-test. The values are given in table 1.

Table 1: Values of t-test for mean score difference in Satisfaction of successful and unsuccessful undergraduate distance learners

Dimensions of Satisfaction	Undergraduate learners	N	Mean	Std. Deviation	SE$_D$	t- value	Remarks
Administrative Support	Successful	127	26.098	3.952	0.671	2.716**	.008
	Unsuccessful	38	24.277	3.524			
Study material	Successful	127	31.153	4.612	0.808	.231	.84
	Unsuccessful	38	31.34	4.295			

Teacher Behavior	Successful	127	12.006	1.679	0.356	.375	.646
	Unsuccessful	38	11.872	1.996			
PCP	Successful	127	26.405	3.931	0.924	1.22	.112
	Unsuccessful	38	25.277	5.278			
Evaluation system	Successful	127	13.626	2.950	0.659	1.561	.069
	Unsuccessful	38	12.596	3.734			
Usefulness of the course	Successful	127	6.02	.936	0.178	2.503*	.027
	Unsuccessful	38	5.5532	.974			
Overall Satisfaction	Successful	127	115.29	12.119	2.161	2.023*	.041
	Unsuccessful	38	110.91	11.555			

It is evident from the values of t given in table 1 that successful and unsuccessful students in undergraduate courses differed significantly on two dimensions of student satisfaction, namely, administrative support (t=2.716, p<0.01) and Usefulness of the course of the course (t=2.503, p<0.05). Along with these, t-value for overall satisfaction also came out as significant (t=2.02, p<0.05) between the two groups. On the remaining variables, namely, satisfaction with study material (t=.231), teacher behavior (t=.375), personal contact programme (t=1.22) and Evaluation system (t=1.561), the values of 't' did not come out as significant at .05 level. While looking at the mean scores of successful and unsuccessful distance learners in these two dimensions where significant differences have been obtained it becomes evident that successful distance learners were more satisfied (M1= 26.098) than unsuccessful distance learners (M2=24.277) with administrative support offered during distance education. Similarly, with respect to the Usefulness of the course, successful distance learners had higher level of satisfaction (M1 = 6.02) than unsuccessful distance learners (M2=5.5532). Overall satisfaction was also found to be significantly higher among successful learners (M=115.29) than unsuccessful learners (M=110.91).

Based on these findings, it may be said that satisfaction of undergraduate students in distance education determine whether they succeed in examination or not as those students who became successful had higher levels of overall satisfaction along with two aspects i.e. administrative services, and Usefulness of the course of the course as compared to those who couldn't succeed in their examination.

Correlation between marks obtained by undergraduate distance learners and their satisfaction
To find out whether the marks obtained by successful distance learners correlate with their satisfaction in distance education, the product moment correlation was worked out. The co-efficient of correlation are given in table 2:

Table 2: Product moment correlation coefficient between marks obtained by Successful Undergraduate distance learners with their Satisfaction scores

Dimensions of Satisfaction	N	r	p-value
Administrative Support	127	.200*	.041
Learning Material	127	.182*	.049
Teachers' Behavior	127	.083	.519
Personal Contact Programme	127	.245*	.032
Evaluation system	127	.132	.156
Usefulness of the course	127	.270**	.009
Overall Satisfaction	127	.382**	.000

As shown in table 2, there came out to be significant positive correlation between marks obtained by successful undergraduate students with scores on five dimensions of student satisfaction i.e. administrative support (.200, p<.05), learning material (.182, p<.05), personal contact programme (.245, p<.05), usefulness of the course (.270, p<.01) and overall satisfaction (.382, p<.01). This signifies that levels of students' achievement increases with increase in their satisfaction with administrative support, learning material, personal contact programme, usefulness of the course and overall satisfaction.

Overall, satisfaction of undergraduate learners in distance education emerged as a significant determinant of their academic success.

Relationship between academic success and satisfaction of distance learners in Post-graduate courses

In case of post-graduate courses also, the difference in satisfaction between successful and unsuccessful distance learners was found out by employing t-test and values are given in table 3:

Table 3: t-values for mean score difference in satisfaction between successful and unsuccessful distance learners in PG courses

Dimensions of Satisfaction	Learners in PG courses	N	Mean	Std. Deviation	SE$_D$	t- value	p-value
Administrative Support	Successful	117	26.094	4.110	0.686	3.001**	.003
	Unsuccessful	40	23.900	3.615			
Learning Material	Successful	117	31.393	4.601	0.844	.259	.796
	Unsuccessful	40	31.175	4.613			
Teachers' Behavior	Successful	117	12.205	1.684	0.352	.723	.432
	Unsuccessful	40	11.950	1.999			
Personal Contact Programme	Successful	117	26.666	4.301	0.742	1.025	.307
	Unsuccessful	40	25.875	3.962			
Evaluation system	Successful	117	13.658	2.986	0.648	1.514	.132
	Unsuccessful	40	12.775	3.711			
Usefulness of the course	Successful	117	6.034	.955	0.171	2.499*	.013
	Unsuccessful	40	5.600	.928			
Overall Satisfaction	Successful	117	116.05	12.18	2.08	2.189*	.030
	Unsuccessful	40	111.27	11.07			

The values of t given in table 3 depict that successful and unsuccessful students in postgraduate courses differ significantly in their overall satisfaction (t=2.189, p<0.05) as well as on two dimensions of student satisfaction, namely, satisfaction with administrative support (t=3.001, p<0.01) and usefulness of the course (t=2.499, p<0.05) as in case of undergraduate students. On the remaining variables, namely, satisfaction at learning material (t=.259), teachers' behavior (t=.72) and personal contact programme (t=1.025) and Evaluation system (t=1.514) the values of 't' are not significant at .05 level.

The mean scores of successful distance learners in their overall satisfaction (M=116.05) being higher than unsuccessful learners (M=11.27), illustrate that the former were more satisfied in distance education than latter. On the two dimensions where significant differences had been obtained, the same trend has been found, that successful distance learners obtained higher mean score than unsuccessful distance learners for satisfaction with administrative support offered during distance education as well as for usefulness of the course of the course thus the successful students in postgraduate course were more satisfied with administrative services and perceived usefulness of the course than the unsuccessful students.

Correlation between marks obtained by successful distance learners in PG courses and their Satisfaction scores

To find out whether the marks obtained by these successful distance learners correlate with their satisfaction in distance education, the product moment correlation was worked out. The co-efficient of correlation are given in table 4:

Table 4: Correlations between marks obtained by successful distance learners in PG courses with their Satisfaction

Dimensions of Satisfaction	N	Pearson Correlation (r)	p-value
Administrative Support	117	.066	.479
Learning Material	117	.040	.669
Teachers' Behavior	117	.038	.687
Personal Contact Programme	117	.025	.793
Evaluation system	117	.117	.211
Usefulness of the course	117	.025	.785
Overall Satisfaction	117	.020	.831

The co-efficient of correlation (r) presented in table 4 indicate that no significant correlation had emerged between marks obtained by postgraduate distance learners with dimensions of student satisfaction, namely, administrative support (.066), learning material (.040), teachers' behavior (.038), personal contact programme (.025), Evaluation system (.117), Usefulness of the course (.025) and overall satisfaction (.020).

The findings related academic success and satisfaction of learners in post-graduate courses show that overall satisfaction of learners determines their success in examination i.e. there exist significant difference in the levels of satisfaction of successful and unsuccessful learners. But for successful learners in postgraduate courses, their extent of satisfaction with different dimensions of distance learning has not come up as a correlate of their level of achievement in examination. In other words it may be said that certain level of satisfaction is crucial to become successful in post-graduate course but further increase in satisfaction do not account for enhancement in the level of success i.e. marks.

Relationship between academic success and satisfaction of distance learners in professional courses

A comparison was made between successful and unsuccessful students in semester end exam of professional courses for their satisfaction in distance education by employing t-test. The values are given in table 5

Table 5: t-values for mean score difference in satisfaction between successful and unsuccessful learners in Professional Courses

Dimensions of Satisfaction	Learners in Professional courses	N	Mean	Std. Deviation	S.E$_D$	t- value	p-value
Administrative Support	Successful	132	26.723	3.630	0.701	2.79**	.009
	Unsuccessful	39	24.76	3.908			
Learning Material	Successful	132	31.347	4.956	0.804	0.828	.538
	Unsuccessful	39	30.68	4.239			
Teachers' Behavior	Successful	132	12.366	2.081	0.373	1.412	.258
	Unsuccessful	39	11.84	2.034			
Personal Contact Programme	Successful	132	26.753	3.683	1.119	1.351	.129
	Unsuccessful	39	25.24	6.697			
Evaluation system	Successful	132	13.436	3.593	0.720	2.714**	.003
	Unsuccessful	39	11.48	4.053			
Usefulness of the course	Successful	132	5.9901	1.269	0.226	1.016	.416
	Unsuccessful	39	5.76	1.234			
Overall Satisfaction	Successful	132	116.61	14.63	2.352	2.914**	.001
	Unsuccessful	39	109.76	12.35			

The t values given in table 5 show that in professional courses, successful learners differ significantly from unsuccessful students in their overall satisfaction in distance learning programme (t=2.914, p<.01) and also in their satisfaction with administrative support (t=2.799, p<0.01) as well as evaluation system (t=2.714, p<0.01). No significant differences were found between these two groups of learners on the remaining dimensions of satisfaction, namely, satisfaction with learning material (t=.828, p>.05), teachers' behavior (t=1.412, p>.05), personal contact programme (t=1.351, p>.05) and Usefulness of the course of the course (t=1.016, p>.05).

While looking at the mean scores of these successful and unsuccessful distance learners where significant differences have been obtained, it became evident that successful distance learners were more satisfied with administrative support offered (M1= 26.723) as well as with evaluation system (M1= 13.43) than unsuccessful distance learners (M2=24.76 and 11.48). On a whole also, the successful learners had higher satisfaction than unsuccessful learners in professional courses.

In other words, those students who succeed in the semester end exams are those who had higher levels of satisfaction with their distance learning programmers (along with two aspects i.e. administrative support, and evaluation system) as compared to those who couldn't succeed in their first attempt in their examination. Thus, satisfaction of students in distance education has emerged as a determinant of their success in distance education.

Correlation between marks obtained by successful learners and their Satisfaction

The co-efficient of correlations (r) between the marks obtained by successful learners in professional courses and their satisfaction score in distance education are given in table 6

Table 6: Correlation coefficients between satisfaction and marks obtained by successful learners in Professional Courses

Dimensions of Satisfaction	N	Correlation coefficients (r)	p-value
Administrative support	132	.330**	.000
Learning Material	132	.223*	.018
Teachers' Behavior	132	.196*	.040
Personal Contact Programme	132	.191*	.044
Evaluation system	132	.289**	.002
Usefulness of the course	132	.151	.114
Overall Satisfaction	132	.318**	.001

The co-efficient of correlation as shown in table 6 indicate that marks of successful students (in professional course) were correlated significantly with their overall satisfaction in distance education (.318, p <0.01) along with its five dimensions i.e. administrative support (.330, p<0.01), learning material (.223, p<0.05), teacher behavior (.196, p<.05), personal contact programme (.195, p< 0.05) and evaluation system (.289, p <0.01). The perceived usefulness of the course was not found to have significant correlation with marks (r=.151, p>.05).

The positive correlation signifies that levels of students' success increases with increase in their satisfaction with administrative support, learning material, teachers' behavior, personal contact programme, evaluation system and overall satisfaction.

These findings elucidate that satisfaction in distance education determine the academic success of distance learners in professional courses.

Common aspects of students' satisfaction as determinants of academic success across courses

It may be comprehended from the findings that irrespective of the course levels, overall student satisfaction is an important determinant of their success. In case of undergraduate and post-graduate courses, satisfaction with administrative support and usefulness of the course ascertain their success in examination whereas in professional courses, besides administrative support another factor is satisfaction with evaluation system. As far as relationship of satisfaction with level of success is concerned, some differences have been found across the courses. As in case of

undergraduate and professional courses, all the factors of satisfaction emerge as significant correlate of marks in examination except evaluation system for undergraduates and usefulness of the course for learners in professional courses. On contrary, none of the factors of satisfaction was found to be correlated with achievement scores at students in post-graduate level examination. The common determinant of success at all the three levels of courses is satisfaction with *administrative support* as well as *overall satisfaction in distance learning*.

DISCUSSION OF THE RESULTS

The findings of the present study illustrate that student satisfaction is significant determinant of academic success of distance learners in all types of courses i.e. undergraduate, post-graduate and professional. These results showed congruence with the findings of many researchers (Keller, 1983; Seirup & Tirotta, 2010; Siqueira & Lynch, 1986; Sloan, 2011) who also found a positive correlation between satisfaction and achievement of distance learners. This relationship may be understood by considering the explanation forwarded by researchers. Sahin and Shelley (2008) cite that 'student satisfaction with their distance education experience may lead to further engagement in class activities, and eventually in higher levels of use of distance learning environments,' and as Pike (1993) believed, the enhanced engagement in academic generally lead to student success

Further, besides overall satisfaction, one factors that surfaced out as significant determinant of student success in distance education irrespective of the type of the courses is satisfaction with administrative support. This is an important finding as till now in the literature of student satisfaction emphasis was placed on teacher, teaching, peer, course content, learning resources etc (Areti, 2006; Colorado & Eberle, 2010; Letcher & Neves, 2010; Rotham, Romeo, Brennan & Mitchell, 2011; Horzum, 2015) and only few studied talked about importance of student satisfaction with administrative support in distance education. In distance education, there a number of issues for which learners have to depend on the administrative staff like queries for deadlines of admission, fee submission, examination schedule, issuing of examination roll number, results, study material distribution etc. and if they do not get required information in time or their administrative problem is not resolved, many of them may miss the examination or sometimes drop out from the system. Wood (1996) pointed that many distance learners faced problems in contacting administrative staff due to geographical distances and face the associated practical difficulties. It has been observed that many distance learners have to come to their nodal centers from distant places near their examination to settle the objections like submission of some documents, deposition of fee or such other problems which consume their lot of time. The timely support save the time of distance learners from roaming around the offices to settle their issues and the same time may be utilized for their preparation for examination as many of them have already have limited time due to their job or family responsibilities. In case such help is not received, then many learners drop out of the system out of their frustration. Therefore, appropriate administrative support is important in distance education as it not only ascertains student retention to some extent but also may determine success.

Besides, perceived satisfaction with usefulness of the course is also important variable for success in undergraduate and post graduate courses. It is believed that if students feel that the distance education course is useful then they enjoy and accept it which further may lead to engagement in class activities, and eventually in higher levels of use of distance learning environments (Lee, Cheung & Chen, 2005; Mitchell, Chen & Macredie 2005; Sahin & Shelley, 2008)

Along with this, among students in professional courses, satisfaction with evaluation system also came out as important determinant of their success and achievement. In professional courses, there is lot of practical work and weightage of internal assessment is very high and the internal marks are deciding factor for the aggregate marks thus success in the examination. It may be that those students who got low internal scores were not satisfied with the examination system and because of their low internal score either they did not get through the examination or passed but with low aggregate score. Because of this, the satisfaction with evaluation system emerged as determinant of success among students of professional courses. In case of undergraduate/postgraduate course internal weightage is very less, thus students success do not much depend on it and therefore satisfaction with evaluation system did not play role in determining their success. This aspect need to be studied qualitatively to find out the aspects of evaluation system with which students in professional courses satisfied/not satisfied as rightly observed by Gibson (1996) who stated that awareness of the learners' attitudes is essential to make them efficient distance learners.

IMPLICATIONS

Of course the academic success of distance learners depends upon the hard work and efforts which they put on their distance education course but the findings of the present study indicated that satisfaction of learners with distance education experiences also influence their success. Thus, Student satisfaction has important implications as suggested by other researchers like Pike (1993) who recommended implication of student satisfaction for teaching due to its bidirectional associations with student engagement and achievement.

The results of present study bring forth that student satisfaction especially with administrative support was the most significant factor of student success across the courses (undergraduate, postgraduate and professional). Therefore, the special attention should be given to the administrative services offered to the distance learners. Firstly, the web-site of the institution offering distance education should have all the necessary information that is required by the distance learners related with course structure, fee, admissions, examinations, assignments, important deadlines etc. Along with this, there should be one window system where all the queries of distance learners may be handled. The grievance redressal cell should work actively to timely resolve the administrative problems of the distance learners. There is an urgent need to train the administrative staff for improving their dealings with distance learners. Gallogly (2005) also recommended that 'attention should be devoted to improving administrative services to enhance the efficiency and effectiveness of course delivery'.

Further, the findings of the study call for proper orientation of distance learners before the commencement of the courses especially for those students who join distance education course for the first time in the higher education institutions. They should be acquainted with the distance education system, about the relevance of the course and its significance for their future life. Along with this, the teachers should be available for the students' academic queries either online or in person so that distance learners may not feel frustrated (as found by Zhang & Perris, 2004) at any stage. The personal contact programmes should be properly designed keeping in view the needs of the learners. By enhancing satisfaction, their success may be ensured to some extent. In case of professional courses, it was found that satisfaction with evaluation system also affect their success. In this regard, the distance educators should acquaint the learners with evaluation system and counsel them so that their anxiety is reduced. More transparency should be brought in the system and other modifications as per the requirements of the learners should be made in the evaluation system so that their dissatisfaction with evaluation system may not affect their success. Subotzky and Prinsloo (2011) also opined that student and institution must exercise joint responsibility to facilitate the students' "walk" through essential processes such as choice of programme, admissions and learning activities that leads to success.

The findings of the study provide an insight to course designers for revitalization of the services according to the expectation of the distance learners in order to enhance their student satisfaction. Naaj, Nachouki and Ankit (2012) advocate that it is imperative to meet or even exceed the distance learners ' expectation to make distance education successful as it not only satisfy them but also lead them to become advocates who provide a free promotion source for the university.

The present study examined satisfaction only but there could be a number of other factors in the way to success of distance learners. It becomes imperative to ascertain the obstacles in their learning process and strategies to overcome these so as to enhance the academic success of distance learners. For this a continuous effort should be made by distance education institutions may be in the form of action research for need analysis of the learners or for identifying the personal or other factors influencing their success. Defining these characteristics may help the institutions to make decisions about course designs and delivery system.

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STUDENTS AS CONSUMERS: USER RESPONSES TO MONEY-BACK GUARANTEES IN HIGHER EDUCATION ON REDDIT

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Abstract: There has been an evidenced growth of student consumerism in the industry of higher education. This consumer-oriented perspective leads to increased levels of student entitlement, directly impacting students' expectations for the learning environment. The present study employs thematic analysis procedures to explore students' reactions to an offer by Udacity, an online provider of massive open online courses (MOOCs), to provide money-back guarantees to students who fail to obtain a job after graduation. Implications for growing levels of student entitlement, as well as strategies to combat them, are discussed.
Keywords: consumerism, education, entitlement, Reddit, Udacity

INTRODUCTION

Consumers are all too familiar with the intrigue, and sometimes caution, associated with a money-back guarantee. However, this advertising tool has extended beyond cheesy, late-night infomercials, or robotic salespeople on home shopping networks, and entered an unlikely setting: online education. Udacity, an online provider of massive open online courses (MOOCs) based in Silicon Valley, recently announced plans to offer a select group of students a money-back guarantee that they will receive a job within six months of graduation (Ruff, 2016). This pioneering educational enterprise strives to bring "accessible, affordable, engaging, and highly effective higher education to the world" through the use of nanodegrees - online certifications that can be earned in 6-12 months (10-20 hours/week) for \$200/month (Udacity, 2016, para. 1). Despite the simplicity surrounding this enterprise, existing research suggests that employers are more willing to hire employers completing degrees in the traditional collegiate setting rather than fully or partially online (Adams & DeFleur, 2006). As such, this development in online higher education has unsurprisingly brought about heated conversation in the media and among educators (e.g., Metz, 2016). Specifically, this pronouncement has prompted dialogues surrounding the rising cost and risk of investing in online education (D'Onfro, 2016) and the potential future of the education system (della Cava, 2016).

Of particular importance to the instructional communication community is the larger metaphor that this guarantee perpetuates: the student as a consumer (McMillan & Cheney, 1996; Penn & Franks, 1982; Woodall, Hiller, & Resnick, 2014). Universities are witnessing a trend towards commercialization of the higher education experience (Bok, 2009). Given the worldwide advances and expansion of higher education within the past century (Schofer & Meyer, 2005), administrators and faculty are being faced with growing pressure to educate students for their careers in a cost-effective manner (Carlson & Fleisher, 2002; Eagle & Brennan, 2007). Consequently, some institutions have adopted innovative business models, reevaluating how the university system is funded and managed, to remain competitive in a consumer-oriented market (Deem, 2004; Katz & Oblinger, 2000). As some research suggests imagining students as customers lessens the rigor of curricula and teaching methods at universities (e.g., Carlson & Fleisher, 2002), research uncovering the growing consumerism of students is paramount for preserving the future of student learning. Thus, the present research uses Udacity's money-back guarantee as a means for examining student consumerism in higher education; a thematic analysis of Reddit user comments concerning Udacity's announcement of this initiative functions as an illustrative context for the investigation of this metaphor.

STUDENTS AS CONSUMERS

Students are often described as consumers within the classroom (McMillan & Cheney, 1996; Penn & Franks, 1982); endeavors of education are tailored and directed towards students who have the decision to participate in or purchase from a particular enterprise (i.e., university). In this way, efforts of an organization are centered

around targeting customers to influence consumption (Tight, 2013). First, it is important to note that, "as with most metaphors, there is nothing inherently wrong" with considering students as consumers (McMillan & Cheney, 1996, p. 4). For the benefit of the education system holistically, just like a business or organization, educational institutions should be held responsible and accountable for the services and goods they provide to students (McMillan & Cheney, 1996). This encompasses, but is not limited to, specifying outcomes (i.e., learning and professional objectives), publicizing prices of goods and services (e.g., cost per academic hour, textbooks, parking), and providing channels for customer complaints (e.g., student teacher and course evaluations; Rice & Stewart, 2000).

However, there are evident limitations and negative implications associated with embracing this metaphor. In the case of Udacity, this consumer-centered approach may cause educators to "become vendors hawking their wares," begging the consumers with pockets full of change to invest in their enterprise (McMillan & Cheney, 1996, p. 7). If education truly is a product that students purchase, then students may have expectations that model that of a consumer: all things should be tailored for me, in my time, the way I want them. This temporary, purchased student 'tenure' places emphasis on what students feel is in their best interest. As many educators can attest, this can be wearisome given the inherent preparatory and prudent role that instructors and administrators are expected, both normatively and structurally, to fill. Furthermore, students may often have a misguided awareness of the processes that will help them meet their educational goals, which could be further related to students' dissenting (Goodboy, 2011) or challenge behavior (Simonds, 1997). Thus, the metaphor of the student as a consumer serves as an appropriate tool for understanding reactions to and impacts of Udacity's controversial marketing ploy. While this company's financial decision may impact their organizational future, this example may be representative of a broadened consumerization of higher education in the *future*. With this in mind, understanding the implications, successes, or downfalls associated with this model will benefit the larger academic community.

As a result of their consumer orientation, students may also exhibit increased levels of entitlement. In educational literature, academic entitlement can be understood as "the tendency to possess an expectation of academic success without taking personal responsibility for achieving that success" (Chowning & Campbell, 2009, p. 983). Entitled students expect to participate in instructional processes according to their preferences (Cain, Romanelli, & Smith, 2012), such that students expect course policy and procedures to be malleable (Miller, 2013). Stout (2000) also advocated that diminishing educational standards have given rise to a generation of students who are unhappy when their expectations for grades are unmet, as they have come to expect high grades for low performance. Additionally, entitled students expect to receive material rewards when they perform well (Greenberger, Lessard, Chen, & Farruggia, 2008), which can be likened to the prospect of being promised a job upon graduation.

Given the argument likening the student-as-consumer metaphor to Udacity's money-back guarantee, the aforementioned literature serves as an appropriate sensitizing lens for understanding students' reactions to Udacity's divisive educational enterprise (Ruff, 2016). Thus, the following research question is posed:

> *RQ: What consumer-oriented reactions are provoked by Udacity's introduction of a money-back guarantee?*

METHOD

Method Description. The researcher conducted a thematic analysis of Internet users' responses to Udacity's promotion as a means of investigating the phenomena of students as consumers (Owen, 1984). Specifically, the study evaluated user posts from the news aggregate website Reddit.com. Reddit.com is one of the most viewed sites on the web, with six percent of online adults being Reddit users (Duggan & Smith, 2013). This social voting site often refers to itself as "the voice of the internet," using aggregate wisdom of Reddit's votes to highlight notable user posts ("About Reddit", 2016). Users, or Redditors, can submit links and comments about an endless possibility of topics, and posts are subsequently appraised by users using "karma" through endorsement with an "upvote" and disapproval with a "downvote" (Bergstrom, 2011). Since its creation, Reddit has evolved into a vibrant, ever-changing online community, connecting users across the globe to cultivate discussion around shared interests (Van Mieghem, 2011). Given the broad range of opinions expressed on this site, the Reddit userboard, "Udacity guarantees job for Nanodegree graduates, or money back" (2016), served as the context of analysis for this inquiry. This userboard, created in January, 2016, specifically focuses on user thoughts and opinions related to Udacity's money-back guarantee. Drawing from existing literature regarding analytic procedures of similar discussion-based, online forums (see Smedley, Coulson, Gavin, Rodham, & Watts, 2015), each message post was selected and included within the analysis ($N = 156$). If a message occurred

within the context of a previous post, the analysis relied on messages outside of the data set to aid in the interpretation of the unit.

Participants. The sample of user posts consisted of all individuals posting to the discussion board prior data collection. Due to the nature of Reddit.com, user demographic data was not readily available for the analysis. Additionally, because Reddit.com is a non-restricted, public access website, individual usernames were retained from the original posting. The researchers also noted that comments were not restricted based on geographic location, gender, identity, or race, considering the individual was aware of the requirements for using the medium. Finally, research has suggested that the driving force behind Reddit's popularity comes from young men and women ages 18-29 (Duggan & Smith, 2013), leaving the website to lag in comparison to more popular social media like Facebook (62% of entire population; Duggan, 2015) and Twitter (20% of entire population; Duggan, 2015). Thus, the researchers feel that sample was not restricted by any type of demographic data.

Data Analysis. This study used open and axial coding to identify key concepts, themes, and topical markers from user comments on Reddit (Lindlof & Taylor, 2011; Rubin & Rubin, 2005). First, comments were read in their entirety twice, first to gain a holistic viewpoint and second to note obvious themes (i.e., open coding; Corbin & Strauss, 2008). Next, prominent segments of the data were copied into a spreadsheet based off notable, meaningful connections. Then, through the process of comparison, reorganization, and revision, data were organized into larger, overarching themes (i.e., axial coding; Strauss & Corbin, 2008). More specifically, the process of axial coding was completed using Owen's (1984) thematic analysis technique. Owen outlined three primary criteria for a theme to be present in a data set: (a) recurrence (i.e., multiple accounts have the same thread of meaning), (b) repetition (i.e., the same wording is duplicated), and (c) forcefulness (i.e., emphasis or stress place on some ideas over another). Ultimately, the goal was to synthesize categories found during open coding to identify salient themes illuminated by participants' responses (Lindlof & Taylor, 2002). Throughout the analysis, relevant literature concerning students' consumerism and entitlement served as a sensitizing lens for understanding user comments, assisting in the formulation of appropriate naming conventions for salient categories.

FINDINGS

The purpose of the present research was to explore Reddit users' reactions to Udacity's job placement guarantee. Analysis revealed three salient themes regarding users' consumer-orientated reactions: (a) the future of education, (b) university selection as shopping, (c) and job preparation and placement expectations.

The Future of Education. The first major theme reflected the possibility of considering Udacity's money-back guarantee as a paradigmatic shift in higher education (Harasim, 2000). While online degree programs and MOOCs are not new (Allen & Seaman, 2007; Alraimi, Zo, & Ciganek, 2015), the theme revolved around the notion that many users recognized the differential educational system being presented through Udacity's changing enterprise in comparison to their own experiences. With the advent and implementation of new technology, westernized educational systems have experienced rapid transformations, with future possibilities constantly expanding (Kaufmann, Tatum, & Frey, in press). Users appeared to envision a changing landscape that more coherently acknowledges the intersection of both shifting technologies and students in education. Redditors participating in the conversation recognize that new opportunities can be created through existing educational systems like MOOCs; however, these reflections occur in conjunction the with idea that institutions like Udacity may be finding new ways to use technology to better reflects the needs of potential students.

Responses illustrated this line of thinking by demonstrating, in numerous ways, how the idea of the future of the educational system represents a shift from their own nostalgic perspective and understanding. Simply, spalunk suggested, "This is the future." Iamthebetamale, along with other users, echoed this projection, writing "This is the future of post secondary education. Not that college is going anywhere, but stuff like this is the future for many." Moreover, these user comments reflect the novelty of the money-back guarantee as an educational concept. Baconmaster also provided some insightful speculation about the nature of this development:

> I'd say it's a symptom of a problem. A (possible) solution to the problem that is overpriced university tuition. It's ridiculous that tuition at my local state colleges for a full time load is starting to creep up closer and closer to the price of a compact car. I always said that bubble that is university tuition was going to pop soon. But thinking about it now, I'm would not be the least surprised if this were to become a new trend.

Perhaps, as baconmastah and others forwarded, rising tuition costs create financial instability for students, making money-back guarantees particularly attractive for students concerned with establishing a stable fiscal future. This makes sense in light of the student-as-consumer metaphor. Despite the lack of legitimacy

surrounding many online degree completion programs (Adams & DeFleur, 2006), some users share the perspective that simply paying money for an educational experience guarantees success. Consequently, if that success is not readily achieved, by fault of the student or institution, then retrospective action should be taken. While the notion of ensuring a financially stable future is also not new to modern students, maybe the novelty of Udacity's marketing ploy comes a shift to meet the needs of today's students in conjunction with shifting technologies. The emphasis placed on the cost of education is further echoed in the second salient theme.

University Selection as Shopping. A second prominent simile permeating Reddit users' responses was the idea that selecting a university is like shopping. For decades, higher education literature has emphasized the contending factors students must consider when choosing potential schools (Erdmann, 1983; Hagedorn, Maxwell, Cypers, Moon, & Lester, 2007). An analysis of user comments revealed three primary subthemes that may influence students' shopping decisions when considering programs like Udacity as consumers: 1) cost, 2) quality, and 3) time.

Cost. The price of higher education is undoubtedly rising (Archibald & Feldman, 2008), and tuition prices are playing an increasingly important role in students' decision making processes (Heller, 1997; Leslie & Brinkman, 1987). In response to Udacity's overall cost and guarantee, Beniskickbutt explained, "You can get through universities fairly cheap if you shop around." In this way, Beniskickbutt is framing a potential degree as a product, wherein one can explore various buying options to find the most economical choice. Reddstudent emphasized the comparative cost of enrolling in Udacity, explaining the company's degree is "wayyyy cheaper" than other options because results are "guaranteed and frugal." Other users used similar language in an exchange focused on the competing costs and benefits of various degree choices.

Past a simple comparison of prices, users integrated additional fiscal concepts to describe the value of degree pursuit. For instance, several users described the value of a degree through an 'investment' metaphor; baconmastah claimed that although attaining a degree through a provider like Udacity may be initially costly, "it's an investment that pays off with time." So, while considering the primary cost of degree is important, individuals should also consider the long-term value of educational decisions. Other users, like lolRedditor, highlighted the importance of a degree's "supply and demand" in the larger market of MOOCs. Under this reasoning, the price to obtain a degree varies as a function of the need in the market for trained individuals holding a certain set of knowledge and skills. Altogether, a degree's cost played a pivotal role in influencing students' shopping decisions. Despite this, as iamthebetamale noted, "Price is only part of the problem, though."

Quality. In addition to cost, users also considered the quality of various degrees in their shopping decisions. Slyfox divulged this criterion distinctly:

> I feel a lot of this depends on the quality of the college courses as well. So many people go through a full 4 year CS [sic] curriculum and still aren't ready for a real job in programming. I'm not saying all curriculum are like this, but a good number of them seem to be really behind the current trends and modern tech stacks that are used at your typical job.

Thus, what differentiates students when entering the workforce is not only their attainment of a degree, but also the quality of the degree that they obtain. Reatest suggested this degree quality predicts the "quality of work" that employers can expect from graduates. Because of this, the quality of a given degree should be an important factor to consider when shopping for potential programs.

However, this theme cannot be considered without the suggestion that Udacity believes they are delivering a competent, high-quality degree. Contrary to existing research and stereotypes concerning online degree completion programs, the narrative spun by Udacity runs counter to the notion that such degrees have a lower reputation (Adams & DeFleur, 2006). Perhaps for-profit institutions like Udacity, who craft messages signaling a willingness to part with compensation in favor of degree quality, gain attraction through the confidence they have in their own curriculum.

Time. The last salient shopping criteria pertained to temporality. Namely, the amount of time it takes to complete a degree surfaced as a major deciding factor for many students. User iamthebetamale commented,

> The time investment is as much of a deterrent to many as the money. We need a lot more postsecondary education options that can be completed in less than 12 months. In other words, we need to expand the vocational school model into a lot more, if not almost all other, fields.

Users expressed opposing opinions when evaluating the amount of time it takes to complete a given degree. As might be expected, users seemed to value the compacted nature of many MOOCs like Udacity. For example, salgat anticipated condensed degrees represent a "legitimate alternative to 4 year universities" for students who desire a "traditional . . . program," while ng731 explained nanodegrees are useful for fast employment.

However, some users were weary of the effectiveness of such shortened programs. AStudyInScarlet criticized the longevity of Udacity's degree, forwarding,

> I don't think you can compact something as valuable as a CS [sic] education at a good university down into 12 months. The rate at which I learn at my school is ludicrous. Each semester I become more powerful than I could possibly imagine.

Other users, such as bvcxy, echoed that "12 months is not enough" given the information that needs to be covered in order to gain competence in a certain area. These competing evaluations suggest that students are attracted to programs that can be completed speedily, as long as the quality of the education is not diminished.

Job Preparation and Placement Expectations. The third theme centered around the discussion of universities' role in preparing students for careers. There was an apparent divide among users' beliefs regarding whether a university was responsible for fully preparing students for the job market. This is consistent with existing research cautioning students and educators when it comes to using online resources and programs to replace traditional classroom learning (Bejerano, 2008). Baconmastah expressed their expectant outlook vehemently, noting that universities like Udacity are:

> Putting their money where their mouths are. If this takes off and gets respectable hiring upon graduation stats and becomes a new trend, burden's gonna be on universities to start doing something they haven't been doing a very good job of doing for the money they charge actually training college grads for the goddamn workforce!

Basically, when it comes to preparing graduates to be competitive applicants in the workforce, users like isdevilis think universities "don't do squat."

However, some users opposed the idea that universities have the burden to fully prepare students to be competitive applicants. Farobek noted that "unis were never built with the intention to be training centres, it's only recently that there has been a shift towards employability." Instead, [deleted] rationalized that "the point of a university is to get an education," not get a "vocation." In this way, if a student finds it difficult to get hired upon graduating, isdevilis believed,

> That's not the university's fault because that's not the point of a university. It'd be like blaming a school for not having a "Life Finances Class" wherein you learn how to do your taxes and learn about basic interest rates, etc. because that's not the job of the school, that's the job of your parents.

Summatively, users had mixed opinions surrounding what burden universities have in preparing students for success on the job market. However, students' lack of success on the job market may instead be a result of unrealistic standards.

Unsurprisingly, users were skeptical of the "money back guarantee" offered by Udacity. Even though the guarantee is limited based on several noted contingencies, many users perceived the promise as too good to be true. Tattoo189 humorously questioned the viability of Udacity's claim, asking, "What kind of job? Does McDonald's count? I want to see the terms." User epiiplus1is0 repeated this cynicism, posting that "cs [sic] jobs are not hard to find. good cs jobs are." Countless user anecdotes detailing difficulties in obtaining desired positions further crystalized the overarching student goal of obtaining a well-paying, conveniently located job. EndsInATangent boldly, albeit sarcastically, challenged users by suggesting their job placement difficulty might be because their "standards are too high." Students may be unhappy with the professional outcomes of their education because they expect better jobs, higher returns, and more money to come from less experience, minimal effort, and little sacrifice.

DISCUSSION

In response to Udacity's recent money-back guarantee, the present research employed a thematic analysis approach to assess consumer-oriented reactions via Reddit. Analysis revealed three salient themes regarding users' consumer-orientated reactions that articulated changes, perceptions, and expectations of online education systems, particularly for-profit institutions. First, users speculated that this case could represent the future of

higher education. Given the rapid development of new technology in higher education, and the increased emphasis placed on job placement, comparable guarantees may represent a new paradigmatic shift for universities. Second, users consistently described selecting an appropriate university as it related to shopping based on the cost, quality, and time of the product being purchased. Third, users discussed whether higher education was burdened with equipping students for the job market. Importantly, several users suggested graduates are unhappy with their initial career success because their expectations are too high. Ultimately, the analysis reveals that consumeristic and entitled perspectives on Udacity's guarantee are conspicuous throughout user comments. Implications for these findings pre-enrollment, during enrollment, and post-enrollment are discussed below.

First, users exhibited a consumer-oriented perspective *pre-enrollment*. Student's consumer-oriented perspectives are arguably most present in the conceptualization of university selection as a form of shopping. Concerns regarding affordability, quality, and timeliness highlighted users' desire to have tailored educational experiences. Udacity's guarantee seems to speak directly towards this appeal, using a common sales tactic to target customers to increase consumption (Tight, 2013). In some ways, this expectation represents an inversion of the traditional college application experience, wherein the role of the students choosing a university is more central than the role of universities choosing students. This perspective could relate directly to students' entitled attitudes in the classroom. As previously explicated, entitled students expect to participate in the classroom according to their preferences (Cain, Romanelli, & Smith, 2012). If students are demonstrating entitled outlooks prior to even entering the classroom, it seems unlikely that similar expectations would not permeate actual instruction. So, the observed increase of students' academic entitlement (Boswell, 2012) could in part be due to increased levels of entitlement in selecting universities.

Second, this consumer orientation was also apparent in users' expectations for universities *during enrollment* regarding job preparation and placement expectations. Users differed on their opinions of whether it was the burden of universities to equip students for success on the job market. Users' differing opinions can undoubtedly be explained due to their varying orientations toward entitlement. Several users placed the burden of their career success directly on their university, implying little personal responsibility for their own preparedness. This speaks directly to conceptualizations of academic entitlement, wherein students hold an expectancy for success without taking personal responsibility (Chowning & Campbell, 2009). Inversely, when students consider job preparation their burden, they are placing less responsibility on external parties, and in turn displaying less entitlement. This explication moves entitlement beyond the confines of the classroom to describe student attitudes for the larger education system, unique from previous research exploring this concept.

Third, users even hold consumeristic views *post-enrollment*. Interestingly, analysis revealed students likely hold entitled, consumeristic attitudes after graduating with a degree. Rather than being happy with *any* job post-graduation, users discussed their interest in getting a respectable job, not just an average job. As EndsInATangent suggested, this dissatisfaction may be a result of unrealistic standards for career outcomes. Stout (2000) provided evidence for how these expectations could be a product of entitlement, as students have come to expect high grades for low performance. In the same way, students may have come to expect high-level jobs for low-level qualifications. Thus, students' entitled behavior within education may directly impact their occupational expectations when entering the workforce.

LIMITATIONS AND FUTURE DIRECTIONS
As with all research, the present study was not without limitations. While the chosen methodology may offer an in-depth exploration of a particular context, there are evident limits to the generalizability of the present findings. Particularly, the characteristics and attitudes of the MOOCs consumer base likely differs from that of a typical four-year university, as evidenced by several users herein. While the explication of consumerism in this context is advantageous, similar research should be conducted to examine manifestations of student consumerism in additional educational contexts. Next, comments on discussion boards often represent the ideas of outspoken, opinionated users. Because of this, more moderate user opinions may not be represented by the available units of analysis. To elicit a broader range of opinions, focus groups or in-depth interviews may be an appropriate means for collecting even richer, or more diverse, user opinions (Lindlof & Taylor, 2011). This additional data could then be triangulated with the existing analysis to further corroborate findings, as Yin (2009) suggests collecting data from various sources strengthens the validity of case study findings.

CONCLUSION
Udacity's progressive guarantee may represent the inevitable future of higher education given the increases in the consumer-orientation of students evident in the current case study. As such, understanding students' consumeristic and entitled learning may help higher education institutions best interact with students pre-enrollment, during enrollment, and post-enrollment. Research should continue to explore the shifting, and often

entitled, preferences of Millennial students in the classroom.

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SYNCHRONOUS E-LEARNING PERFORMANCE IN RELATIONS TOTHINKING SKILLS, EXECUTIVE FUNCTIONS AND ATTENTION BENEFITS OF STUDENTS

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Abstract: Synchronous e-learning between the students and teachers could possible via WhatsApp, Web-conferencing, Blackboard Collaborate, Adobe Connect, WebEx, IMO, or Skype. The main objectives of the study are to assess the effects of Synchronous e-learning performance in relations to Thinking skills and Executive functions and Attention benefits of elementary students. Sixty students (n=60) age range 13.2 year-13.8 years, mean age 13.4 and SD 2.1of class VIII in a school was participated in the synchronous e-learning. Non-Equivalent Pre-test-Post-test Quasi-experimental Design was used in this study by following non-randomization and selective manipulation principle. The effectiveness of independent variables (i.e. synchronous e-learning, thinking skills, executive functions, and attention benefits) on the dependent variables (i.e. learning performance) was assessed through pre-test post-test score, where pretest used as the covariate. To minimize the effects of confounding variables, ANCOVA, multiple hierarchical regression analysis and non-randomize sampling techniques were used. The findings of the present study claimed that students perceived benefits to Synchronous e-learning environment.

Keywords: Attention Benefits, Executive Functions, Synchronous e-learning and Thinking Skills.

INTRODUCTION

E-learning is a powerful tool which plays a crucial role to achieve, improve and update the skills of learning about the new advancements and technological perspectives in the field of education. Moreover, E-learning is becoming an important prospect of an educational system as it is working as a boon in the modern times in improving or evaluating the quality of education. Synchronous e-learning mainly refers to a learning event in which groups of students are engaging in learning at the same time. Synchronous learning can be facilitated by having students and instructors participate in a class via a web conferencing tool, Blackboard Collaborate, Adobe Connect, WebEx, imo, or Skype (Johnson, 2006) these synchronous learning tools are designed to develop and strengthen instructor-student and student-student relationships. Now, we are living in the knowledge based global world where there is a rapid advancement of science and technology. In fact, communication and technology plays a dominating role in almost all the sectors of human life like: business, industry, bank and education etc. Information and Communication Technology (ICT) refers to all the technologies through which people can communicate with others across the world. A synchronous learning event would involve students watching a live web stream of a class, while simultaneously taking part in a discussion. Synchronous e-learning is an online mode of education providing media such as video-conferencing chats and emails which have the potential to support e-learners in the development of teaching-learning process (*Hrastinski, 2008*). In the present study, synchronous e-learning intervention was provided through WhatsApp.

SYNCHRONOUS E-LEARNING

A total of 15 studies were reviewed in support to synchronous e-learning performance. Out of these 10 studies were experimental, 1 survey study, 1 case study, 1 descriptive, 1 study qualitative and a single study is conceptual. No study was found relating to synchronous e-learning and learner's performance conducted in India. Out of 11 experimental studies, most of were conducted in European countries and few were conducted in American continent. Most of the participants are university level and few were college and school level. The

sample size was ranged from 4 to 1,748 those were exposed to questionnaire, interview and with online intervention on campus and off campus tutorial, and other modern inventions were controlled was not treated with any modern method. In Sweden, a quasi-experimental design was framed on 24 subject case 1 and 74 subjects case 2 at university level result shows that synchronous use of chat as compared to asynchronous used of discussion board induced more support to social exchange was supported by (Hrastinski, 2008). One study were conducted in Tehran with 26 college students in New York found Synchronous communication tools play in developing a sense of community in online-learning environment among the leraners (Wang, 2008). A study was conducted in Spain with 240 university clients found supported network design in synchronous e-learning (Granda, Garcia, Nuno and Suarez, 2010). Another two studies were conducted in USA participant ranged from 4-67 on university and college students by (Stewart, Harlow & Bacco, 2011: Olaniran, 2006) found a significant effect of synchronous course provided through CMC. Asterhan and Tammy, 2011 conducted a study in Jerusalem on online discussion over face-to-face discussion found significant effect. Two studies were conducted in Australia with sample size range from 26-1748 on university students found web conferencing enhances teaching- learning synchronous environment (Bower, 2011) but contrast to the study conducted by (Bower , Dalgarno, Kennedy, Kenny & Kepner, 2015) found a learning outcomes before, during and after blended synchronous lesson was not significant. One more study is conducted by (Ten, Chen, Kinshuk and Leo, 2012) were 16 week seminar was organized and found that CMC has a significant effect on teaching and learning across geographical boundaries. Two studies were conducted in Taiwan on university students ranged from 160-212 by (Chang and Wu, 2015: Wu, Tennyson & Hsia, 2013) found relationship between innovative and creative learning environment including web based synchronous learning significantly affect learning. Another study was conducted in Netherland with 110 students found synchronous communication in e-learning gas a significant on the learner's performance (Giesbers, Rienties, Tempelaar & Gijselaers, 2013). Another descriptive study was conducted in China by (Wang, Jaeger, Liu, Guo & Xio, 2013) including 45 participants found a significant effect of synchronous technologies for students' achievement. One qualitative study was conducted by (Szeto, 2014) in Hongkong, China including 28 participants were 14 online group students and 14 face to face group students found a significant effect of blended synchronous on teaching and learning for quality education. An experimental study conducted by (Mullen, Byun, Gadepally, Samsi, Reuther & Kepner, 2017) on 100 participant of Institute of learning was found not significant effect of HPC learning path. To know the effect of this online learning the present study was undertaken by the researcher.

SYNCHRONOUS E-LEARNING IN RELATIONS TO THINKING SKILLS
A total of 12 studies were reviewed in support to synchronous e-learning performance in relations to thinking skills; out of these 11 were experimental studies and one is survey study. The first study was conducted in London by (Blakemore & Choudhury, 2006) undertaking 145 participant from medical institute found a significant effect of changes in brain structured in both adolescence and early adulthood stage of development among the learners. A study was conducted in Ankara by (Akyuz, 2009) undertaking 44 participants of university students found no significant difference between pre-test and post-test result among the student's academic achievement. A study was conducted by (Cavus, 2009) in North Cyprus undertaking total no. of 41 participants were 20 male and 21 female university undergraduate students found a significant effect of mobile learning in changing students attitude towards learning environment. One study was conducted by (Lee, 2013) in Australia undertaking 1st group 672, and 2nd group 23 college students' found no significant difference between thinking skills and cognitive social presence among the students. One survey study was conducted in Auckland by (Samarraie, Teo & Abbas, 2013) undertaking 210 university students as a participant found a significant effect of structured representatives in influencing students metacognitive activities. In the above discussion, it was noted that most of the studies in relations to thinking skills has a significant effect over traditional learning but few studies were not significant and disagreed with the findings that is why the present study was undertaken. Two studies were conducted in Thailand were 1st study included 30 school students found a significant difference between pre-test and post-test among the learners (Petchtone & Sumalee, 2014) whereas 2nd study included 30 university students' found e-learning has a significant effect in developing creative thinking among learners in pursuing higher education (Songkram, 2015). One study was conducted by (Vainikainen, Hautamaki, Hotulainen & Kupiainen, 2015) in Finland undertaking 1543 school students' found formal thinking of an individual has a significant effect on verbal and quantitative reasoning. Another study was corroborated in Melbourne by (Broadbent & Poon, 2015) taking 140 online group students and 466 blended group students found a significant effect of using time management and elaborative strategies for academic achievements between both the groups of student's. Another study was supported by (Thaiposri &Wannapiroon, 2015)findings show that information and communication technologies play an important role in student developments in 21st century learning. In this study, students used social network to communicate and collaborate with each other during learning activities. Enhancing students' critical thinking skills through teaching, and learning by inquiry-based learning activities using social network and cloud computing is appropriate for application to real practice and helps student to develop the knowledge and skills that they will

require to achieve success in the information age. A study was conducted in New Zealand and Korea participants of 25 university students by (Lee, Parsons, Kwon, Petrova, Jeong & Ryu, 2016) found significant effect of mobile learning tools' in providing information within and between the learning situation for academic achievement. Cheng & Wang, 2017 conducted in Hongkong including 3,869 college student participants found there is no significant difference between students' thinking skills and learning dispositions.

SYNCHRONOUS E-LEARNING IN RELATIONS TO EXECUTIVE FUNCTIONS

The researcher reviewed a total of 11 experimental studies were undertaken in support to synchronous e-learning performance in relations to executive functions. The first study was conducted by (Welsh, Pennington & Groisser, 1991) undertaking 110 university students in Denver found no significant early prefrontal skills in relations to attentional stage of order. In the above discussion, it was noted that executive function has a significant effect over the traditional learning style but few studies were not significant and effective so the present study was undertaken. A study was conducted in London including 50 participants were 25 were male and 25 were female school students found a significant links between Executive Functions (EFs) and Theory of Mind (TOM) in students' performance (Hughes, 1998). One study was conducted in USA by (Carlsona, Mosesb & Bretona, 2002) undertaking 47 university students found there is a no significant relations between Executive Function (EF) and false belief understanding among the learner's. A study was conducted by (Kane & Engle, 2002) undertaking 104 university students in North Carolina and Georgia found a significant bonding between working memory, intelligence and prefrontal cortex functions simultaneously among learners performance. One study was conducted by (Carlson, Stephanie, Mandell, Dorothy, Williams & Luke, 2004) found a relation was non-significant with the controls included as individual differences in EF were relatively stable. Another study was conducted by (Willcutt, Doyle, Nigg, Feroane & Pennington, 2005) participants ranged from 2969 without ADHD and 3734 with ADHD group of medical institute found a significant difference between both the groups of children's. A study was conducted by (Thomson & Gathercole, 2006) including 51 participants were 27 were boys and 24 were girl's school students in England found that working memory and inhibitory control hassignificant effect over the traditional learning approach. A study was conducted in UK by (Bull, Espy & Wiebe, 2008) undertaking 124 pre-school children found a significant effect in between the variance of cognitive skills and math and reading. Another study was supported by (Anderson, 2010) on ecological validity of EF tests and neuropsychological assessment procedures are examined, and adjunct methods of measurement are presented to enable a more comprehensive and valid assessment of EF. One study was conducted in Spain by (Rueda, Posner & Rothbart, 2010) undertaking participant ranging from 2 to 3 yearskindergarten school children's found a significant effect between cognitive and behavioral training in relations to attentional control. One study was conducted by (Becker, Miao, Duncan & McClelland, 2014) undertaking 127 pre-school and kindergarten school children's in United States found a significant relations between stimulus Response (SR) and Executive Functions (EFs) with Visuo Motor Stimulus (VMS) among the children's. A study was conducted by (Cragg, Keeble, Richardson, Roome & Gilmore, 2017) undertaking total of 293 participants were 84 primary students , 67 secondary students , 67 university students and 75 adult young ; U.K found there is no significant effect between executive function and mathematics achievement among the learners performance. One last study was supported by (Vandenbroucke, Verschueren & Baeyens, 2017) results indicate moderate to large growth and stability in working memory and cognitive flexibility and small improvements and stability in inhibition.

SYNCHRONOUS E-LEARNING IN RELATIONS TO ATTENTION BENEFITS

A total of 8 studies were undertaken in support to synchronous e-learning performance in relation to attention benefit of the student's achievements. A first study was conducted by (Posner & Peterson, 1990) in Missouri undertaking 25 university students found a significant effect of attention to the targeted group as it was impaired in nature. Another study was conducted by (Cowan, Nugent, Elliot, Ponomarev & Saults, 1994) in Missouri, Columbia & Portland undertaking total number of 24 school, college and university students found a significant effect of spatial cueing modulation over spatial Stroop object based attention. Another experimental study is conducted by (Pomplun, Reingold and Shen, 2001) in Toronto, Canada undertaking 24 university students including 8 students in each group found a significant effect of both comparative task and attentional manipulation on visual span size. A study was conducted by (Puez & Solis, 2007) undertaking 521 college students found a significant effect of attention, working memory, and executive functions are separated but itsustained a fast improvement in performance of the students. Another study was conducted by (Chen & Wu, 2015) in Taiwan undertaking 37 university students found that videos lecture has a significant effect on student's performance. A study was supported by (Gaston, Moore & Butler, 2016) in Canada undertaking two group of students i.e., 23 and 18 found in attention, hyperactivity, oppositional behaviour has a significant effect on the nature of the learners. The last study was conducted in Finland by undertaking a total of 15 medical students were 8 female and 7 male by (Salo, Salmela, Salmi, Numminen & Alho, 2017) found a significant

effect of attention as same while using or applying other objects too. Another study was conducted by (Bosse & Valdois, 2009) in France found visual attention span gas a significant effect on reading skills of the learners.

OBJECTIVES OF THE STUDY
1. To study the effects of synchronous e-learning performance in relations to thinking skills of elementary students.
2. To study the effects of synchronous e-learning performance in relations to executive functions of elementary students.
3. To study the effects of synchronous e-learning performance in relations to attention benefits of elementary students.
4.

HYPOTHESIS OF THE STUDY
H1: There is no hierarchical significant relationship among the synchronous e-learning performance and thinking skills of elementary students.

H2: There is no hierarchical significant relationship among the synchronous e-learning performance and executive functions of elementary students.

H3: There is no hierarchical significant relationship among the synchronous e-learning performance and attention benefits of elementary students.

METHODOLOGY
Participants
The study aimed to assess the effects of synchronous e-learning performance in relations to thinking skills, executive functions, and attention benefits of elementary school students. Sixty students (N=60) age range 13.2 year-13.8 years, mean age 13.4 and SD 2.1of class VIII in a school was assigned for synchronous e-learning. For synchronous e-learning WhatsApp intervention was given to the students.

Design of the study
Non-Equivalent Pre-test-Post-test Quasi-experimental Design was used in this study by following non-randomization and selective manipulation principle. The effectiveness of independent variables (i.e. synchronous e-learning, thinking skills, executive functions, and attention benefits) on the dependent variables (i.e. learning performance) was assessed through pre-test post-test score, where pretest used as the covariate. To minimize the effects of confounding variables, ANCOVA, multiple hierarchical regression analysis and non-randomize sampling techniques were used. The finding of the study was generalized upon the whole population. The schematic representation of the design of the study is given below in the table no. 1.

Table no. 1 Design of the study

Groups	Nature	Pretest	Intervention	Post test
Experimental Group (60)	Synchronous e-learning	Achievement Test Thinking skill Test Executive function Scale Attention benefit scale	WhatsApp	Achievement Test

Tools

There are four tools such as Achievement Test, Thinking Skill Test, Executive Function Scale and Attention Benefit Scale used in this study. The details of the tools regarding construction and standardization procedures were given below.

INSTRUMENTATION
Achievement Test in Geography
Barman & Jena (2017) developed an achievement test on Geography based on the syllabus for Class VIII students affiliated to NCERT, New Delhi. The test contains 40 items having 10 short type items, 18 multiple-choice items having 4 options with three good distracters, and 12 very short type items developed with equal weightage. A maximum mark of the achievement test was 100. In addition to that, Content validity ratio (CVR=.86), test-retest reliability and split half reliability coefficient was .90 and .89 respectively and the time duration to response the items was 10-15 minutes has established.

Table no. 2 Tool specification of Achievement Test

Material	Achievement test on geography has short, long, multiple choice types items. Each multiple choice type itemshave four options and out of this one correct response and other three are good distracter.
Scoring	1 point for each correct response
Administration	Flexible
Norms	Percentile norms available
Reliability	
Test retest	r=.90
Cronbach alpha co- efficient	r=.89
Validity	
Content	Lawshe(1975) developed a formula termed the content validity ratio:$CVR=(n_e—N/2)/(N/2)$ where CVR = content validity ratio n_e =number of SME panelists indicating "essential" N= total number of SME panelists. This formula yields values, which range from +1 to -1; positive values indicate that at least half the SMEs rated the item as essential. The mean CVR across items may be used as an indicator of overall test content validity. Here, the CVR=.83
Usability	
Availability	Sample available to administer the tool
Ease of use for tester	No
Range of use	No
Time limit	No time limit is given for the test. However, most of the students finish it within 10 minutes.

Thinking Skill Questionnaires

Thinking Skill Test(Barman & Jena, 2017) has 3 sub-areas (convergent thinking, divergent thinking and creative thinking) assessed through MCQ, assertion and picture identification type of items constructed in corroboration with 4 chapters of 8th class Geography. The standardized criteria were followed during the construction of the items. The Construct Validity Ratio was .83, split half .89 and Cronbach α .88 and time duration (10-15 minutes) to response the whole items was established.

Table no.3 Tools of specification of Thinking Skills Test

Standardization	
Material	Thinking Skill Test (Barman & Jena, 2017) has three dimensions (i.e. convergent thinking, divergent thinking, and creative thinking) like Kirton's model of Thinking Skills Test.
Scoring	01 point for each correct response of the item
Administration	Flexible
Norms	Percentile norms available
Reliability	
Cronbach α	α =.88
Guttmann's Split-half	r=.89
The inter-item correlation ranged from	.66-1
Factor analysis	Factor analysis was calculated for convergent thinking found .91, divergent thinking .94, and creative thinking .91.
Principal component analysis	Principal component analysis used in the extraction method where the initial Eigen values ranged from 1.152 to 52.53
Validity	The validity coefficients, with English version of this instrument was estimated on a sample of 200 students of secondary classes
Construct : convergent	The construct validity of the tool (Cronbach, 1990; Cronbach &Meehl, 1955) has been tested in several studies, showing moderate correlations (0.40-0.65)
Usability	

Availability	Sample available to administer the tool
Ease of use for tester	No
Range of use	No
Time limit	No time limit is given for the test. However, most of the students finish it within 10 minutes.

Executive functions Scale

Executive Function Scale (Barman & Jena, 2017) has three sub-areas (working memory, self-monitoring and task initiation). All the items were statement form, matching types, picture identification, passage, and analogy types. During the construction of the test items of executive functions scale all the standardized steps were followed. Construct validity ratio.86, test- retest reliability .87 and maximum 10-15 minutes to response the whole items was established. The details of Tool specification of Executive functions Scale is given below.

Table no. 4 Tools of specification of Executive functions Scale

Standardization	
Material	Executive Function Scale (Barman & Jena, 2017) has three sub-areas (working memory, self-monitoring and task initiation).
Scoring	01 point for each correct response of the item
Administration	Flexible
Norms	Percentile norms available
Reliability	
Test- retest reliability	.87
Factor analysis	Factor analysis was calculated for working memory .86, self-monitoring .87 and task initiation .88
Principal component analysis	Principal component analysis used in the extraction method where the initial Eigen values ranged from 1.152 to 52.53
Validity	The validity coefficients, with English version of this instrument was estimated on a sample of 200 students of secondary classes
Construct validity ratio	.86
Usability	
Availability	Sample available to administer the tool
Ease of use for tester	No
Range of use	No
Time limit	No time limit is given for the test. However, most of the students finish it within 10 minutes.

Attention Benefit Scale

Attention Benefit Scale (Barman & Jena, 2017) has three basic areas: Attention Time Span (picture identification, tick the odd out & naming the image), Attention Representing (sentence completion & short notes) and Attention Analyzing (naming the pictures, fill in the blanks & group activity). Construct Validity Ratio .89, test- retest reliability .88 and the maximum time 10-15 minutes time to response the whole items was established.The details of the tool specification of attention benefit scale are given below.

Table no. 5 Tools of specification of Attention Benefits Scale

Standardization	
Material	Barman & Jena, 2017 Attention Benefit Scale has three basic areas: attention time span, attention representing, and attention analyzing.
Scoring	01 point for each correct response of the item
Administration	Flexible
Norms	Percentile norms available
Reliability	
Test- retest reliability	.88
Factor analysis	Factor analysis was calculated for attention time span .78, attention representing, 87, and attention analyzing .88.
Principal component analysis	Principal component analysis used in the extraction method where the initial Eigen values ranged from 1.152 to 52.53
Validity	The validity coefficients, with English version of this instrument was estimated on a sample of 200 students of secondary classes
Construct Validity Ratio	.89
Usability	
Availability	Sample available to administer the tool
Ease of use for tester	No
Range of use	No
Time limit	No time limit is given for the test. However, most of the students finish it within 10 minutes.

Procedure of experiment for Synchronous e-learning

The study aimed to examine the effects of synchronous e-learning on the academic performance, thinking skills, executive functions and attention benefitsof students. Before conducting the Synchronous e-learning, a day pre-intervention training was organized for the experimental group. In this training program, learners were advised on how to operate the WhatsApp and on how to chat or how to send or communicate and share the informations to a researcher. As per the training, participants interact with the researcher through WhatsApp, and the researcher advised to collect the related learning materials through WhatsApp group to read and understand the concepts by themselves up to their possibility level. In regard, to understand or to clarify the doubts, participants were advised to contact or send message in the WhatsApp group to the researcher for their difficulties, misunderstanding, misconceptions, and better clarifications. As per syllabus, the learning materials were provided to the participants for better clarification of the concepts. This process continued up to three months to cover up all the entire 4 chapters respectively. Before instructions, a pre-test on geography was administered and after instructions, the same achievement test on geography counted as the post-test was administered. The phases of instructions of Synchronous e-learning are given below.

Phases1. Sending learning materials on Geography

The whole geography book of Class VIII classified into chapter1 (Resources), chapter2 (Land, Water & Soil), chapter3 (Minerals & Power Energy) and chapter4 (Agriculture) respectively. The lesson plans were developed and learning materials were downloaded. Few pdf files, videos, images, few Wikipedia materials, screened and uploaded to the WhatsApp group and advised the participants to read the materials at their own pace and if they find difficulties in understanding, the concepts they could text with the researcher about their queries at any time. The materials were uploaded frequently according to the needs of the participants and this process was continued up to the end of the instruction.

Phase2. Building concrete idea with synchronous e-learning

Participants used the learning materials in addition to their previous knowledge, applied their pace of learning, and constructed their ideas through Synchronous e-learning (WhatsApp).

Fig 1: Synchronous e-learning WhatsApp lesson plan

Synchronous e-learning(WhatsApp)
Subject-Geography
Concept- Resources and its types
Class- 8th Standard
Period- 2nd period**Time-** 11 to 12
Objectives
  ➢ Understand meaning of resources
  ➢ Differentiate between natural and man-made resources
  ➢ Define biotic and abiotic resources
Materials
    Printed Materials (MCQ)
  ➢ Geography Text-Book
  ➢ PDF notes
Methodology
  ➢ Classroom demonstration
  ➢ Assigning the MCQ
  ➢ Using emails forums
Evaluation
  ➢ Go through the materials

Analysis and Results

Testing of Hypothesis 1: There is no hierarchical significant relationship among the synchronous e-learning performance and thinking skills of elementary students

Table 1.1 Mean and SD synchronous e-learning performance, convergent thinking skills, divergent thinking skills, and creative thinking skills of elementary school students

	N	Mean	SD
Synchronous e-learning	60	60.08	6.606
Thinking skills			
Convergent thinking skills	60	9.17	4.251
Divergent thinking skills	60	8.77	4.027
Creative thinking skills	60	8.63	2.934

a. Predictors: (Constant), Convergent thinking skills
b. Predictors: (Constant), Convergent thinking skills, Divergent thinking skills
c. Predictors: (Constant), Convergent thinking skills, Divergent thinking skills, Creative thinking skills
d. Dependent Variable: Synchronous e-learning

Table 1.1 reveals the Mean, Standard Deviation (SD) of post-test score of synchronous group of participants. The post-test mean and SD of synchronous e-learning group participants was post-test was (mean= 60.08 & SD = 6.606) convergent thinking skills mean and SD was (9.17 & 4.251) and divergent thinking skills mean and SD was (8.77& 4.027) and creative thinking skills was (8.63 & 2.934). However, the mean and standard deviation of convergent thinking skill was better over both the divergent and creative thinking skill.

Table 1.2 R, R^2, adjusted R^2 and Durbin-Watson Synchronous e-learning performance, convergent thinking skills, divergent thinking skills, and creative thinking skills of elementary school students

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.945a	.893	.892	2.175	.893	486.406	1	58	.000	
2	.949b	.900	.897	2.120	.007	4.028	1	57	.050	
3	.964c	.929	.925	1.812	.028	21.993	1	56	.000	.469

a. Predictors: (Constant), Convergent thinking skills
b. Predictors: (Constant), Convergent thinking skills, Divergent thinking skills
c. Predictors: (Constant), Convergent thinking skills, Divergent thinking skills, Creative thinking skills
d. Dependent Variable: Synchronous e-learning

In table 1.2, the column labelled R is the values of the multiple correlation coefficients between the predictors and the outcome. When convergent thinking skills, divergent thinking skills, creative thinking skills were used as the predictors, this is the simple correlation between synchronous e-learning and, convergent thinking skills (0.945), convergent thinking skills, divergent thinking skills (.949) and convergent thinking skills, divergent thinking skills, creative thinking skills (.964).

The next column gives us a value of R^2, which is a measure of how much of the variability in the outcome is accounted for by the predictors. For the first model, its value is 0.893, which means that convergent thinking skills accounts for 89.3% of the variation in synchronous e- learning. However, for the final model (model 3), this value increases to 0.925 or 92.5% of the variance in synchronous e-learning. Therefore, whatever variables enter the model in block 2 account for an extra (92.9-89.3) 3.6% of the variance in synchronous e-learning scores (this is also the value in the column labelled R−square change but expressed as apercentage).

The adjusted R^2 gives idea of how well the model generalizes and ideally, it would like its value to be the same, or very close to, the value of R^2. In this table, the difference for the final model is a fair bit (0.929 – 0.925= 0.004 or 0.4%). This shrinkage means that if the model were derived from the population rather than a sample it would account for approximately 0.4% less variance in the outcome.

The Durbin-Watson tests statistics identified the correlations between errors. Specifically, it tests whether adjusted residual are correlated. In short it assessed the assumption of independent errors. The tests statistics can verify between 0 and 4 with a value of two meaning that the residuals are correlated. A value greater than 2 indicates a negative correlation between adjusted and residuals whereas a value below 2 indicated a positive correlations. The closer to 2 that the value is better and for this data the value is .469 which is closer to 2 that the assumption has almost certainly been met.

Table 1.3 ANOVA of Synchronous e-learning performance, convergent thinking skills, divergent thinking skills, and creative thinking skills of elementary school students

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	2300.292	1	2300.292	486.406	.000[b]
1	Residual	274.291	58	4.729		
	Total	2574.583	59			
	Regression	2318.395	2	1159.197	257.913	.000[c]
2	Residual	256.188	57	4.495		
	Total	2574.583	59			
	Regression	2390.636	3	796.879	242.598	.000[d]
3	Residual	183.947	56	3.285		
	Total	2574.583	59			

a. Dependent Variable: Synchronous e-learning
b. Predictors: (Constant), Convergent thinking skills
c. Predictors: (Constant), Convergent thinking skills, Divergent thinking skills
d. Predictors: (Constant), Convergent thinking skills, Divergent thinking skills, Creative thinking skills

Table 1.3 reveals the output contains an analysis of variance (ANOVA) that tests whether the model is significantly better at predicting the outcome than using the mean as a 'best guess'. Specifically, the *F*−ratio represents the ratio of the improvement in prediction that results from fitting the model (labelled 'Regression' in the table), relative to the inaccuracy that still exists in the model (labelled 'Residual' in the table). If the improvement due to fitting the regression model is much greater than the inaccuracy within the model then the value of *F* will be greater than 1 and SPSS calculates the exact probability of obtaining the value of *F* by chance. For the initial model the *F*−ratio $(1, 58)$ = 486.406 p< .05, which is very unlikely to have happened by chance ($p < .001$). For the second model the value of $F (2, 57)$ = 257.913, which is also highly significant ($p < .05$), and in the final model the F $(3, 56)$ = 242.598, which is also highly significant ($p < .05$). We can interpret these results as meaning that the final model significantly improves our ability to predict the outcome variable.

Table 1.4 Coefficients for Synchronous e-learning performance, convergent thinking skills, divergent thinking skills, and creative thinking skills of elementary school students

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	46.620	.672		69.383	.000		
	Convergent thinking skills	1.469	.067	.945	22.055	.000	1.000	1.000
2	(Constant)	46.812	.662		70.713	.000		
	Convergent thinking skills	2.003	.274	1.289	7.306	.000	.056	17.841
	Divergent thinking skills	-.581	.290	-.354	-2.007	.050	.056	17.841
3	(Constant)	41.515	1.263		32.862	.000		
	Convergent thinking skills	.782	.350	.503	2.232	.030	.025	39.856
	Divergent thinking skills	-.915	.258	-.558	-3.553	.001	.052	19.320
	Creative thinking skills	2.250	.480	.999	4.690	.000	.028	35.580

a. Dependent Variable: Synchronous e-learning

In table 1.4 the multiple regressions model interpreted in the form of an equation that contains a coefficient (*b*) for each predictor. The first part of the table gives us estimates for these *b* values and these values indicate the individual contribution of each predictor to the model.

The *b* values tell us about the relationship between synchronous e-learning performance and each predictor. If the value is positive, we can tell that there is a positive relationship between the predictor and the outcome whereas a negative coefficient represents a negative relationship. For these data, both predictors have positive *b* values indicating positive relationships but a predictor like divergent thinking indicated negative. So, as convergent thinking skills increases, synchronous e-learning performance increases and as creative thinking, increase so does synchronous e learning performance. The *b* values also tell us to what degree each predictor affects the outcome if the effects of all other predictors are held constant.

Each of these beta values has an associated standard error indicating to what extent these values would vary across different samples, and these standard errors are used to determine whether or not the *b* value differs significantly from zero (using the *t*-statistic that you came across last year). Therefore, if the *t*-test associated with a *b* value is significant (if the value in the column labelled Sig. is less than 0.05) then that predictor is making a significant contribution to the model. The smaller the value of Sig. (and the larger the value of *t*) the greater the contribution of that predictor. For this model, convergent thinking, $t(158)$ $(69.383+22.055) = 91.438$, $p < .05$, and creative thinking, $t(156) = 4.690$, $p < .05$) are significant predictors ofsynchronous e-learning performance. From the magnitude of the *t*-statistics we can see that the Synchronous e-learning performance had slightly more impact than divergent thinking$t(157) = -2.007$, $p = .05$).

The *b* values and their significance are important statistics to look at; however, the standardized versions of the *b* values are easier to interpret because they are not dependent on the units of measurement of the variables. The standardized beta values are provided by SPSS and they tell us the number of standard deviations that the outcome will change because of one standard deviation change in the predictor. The standardized beta values) are all measured in standard deviation units and so are directly comparable: therefore, they provide a better insight into the 'importance' of a predictor in the model. The standardized beta (β) values for convergent thinking skills is 0.503 p <.05, divergent thinking skills is -0.558 p<.05 and for creative thinking 0.999 p<.05. This tells us that convergent thinking skills, divergent thinking skills, creative thinking skills have statistically significant impact in the model.

Table 1.5 Excluded variables[a] of Synchronous e-learning performance, convergent thinking skills, divergent thinking skills, and creative thinking skills of elementary school students

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Divergent thinking skills	-.354[b]	-2.007	.050	-.257	.056	17.841	.056
	Creative thinking skills	.790[b]	3.515	.001	.422	.030	32.857	.030
2	Creative thinking skills	.999[c]	4.690	.000	.531	.028	35.580	.025

a.   Dependent Variable: Synchronous e-learning

b.   Predictors in the Model: (Constant), Convergent thinking skills

c.   Predictors in the Model: (Constant), Convergent thinking skills, Divergent thinking skills.

Table 1.6 Collinearity diagnostics[a] Synchronous e-learning performance, convergent thinking skills, divergent thinking skills, and creative thinking skills of elementary school students

Model	Dimension	Eigen value	Condition Index	Variance Proportions			
				(Constant)	Convergent thinking skills	Divergent Thinking skills	Creative Thinking skills
1	1	1.909	1.000	.05	.05		
	2	.091	4.568	.95	.95		
2	1	2.876	1.000	.02	.00	.00	
	2	.119	4.922	.98	.01	.01	
	3	.005	24.171	.00	.99	.99	
3	1	3.873	1.000	.00	.00	.00	.00
	2	.119	5.693	.21	.01	.01	.00
	3	.006	26.529	.04	.21	.99	.06
	4	.002	45.238	.75	.78	.00	.94

a. Dependent Variable: Synchronous e-learning

Table 1.6 depicts the Collinearity is a phenomenon in which one predictor variable in a multiple regression model can be linearly predicted from the others with a substantial degree of accuracy. Here, there are two statistics one is tolerance and other is VIF. In tolerance statistic $1-R^2$ (R^2 is the amount of variance in dependent variable in a multiple regression explained by a combination of all of the independent variables). If the tolerance is below .20 it means at least 80 % of the variance of this independent variable is share with some other independent variables. It means that the multiple correlation of the other independent variable with this independent variable is at least .90 (because $.9 \times .9 = .81$). In the recent data the tolerance of convergent thinking skill .100 is just above .2 similarly in the final model 3 convergent thinking skill, divergent thinking skills and creative thinking skill tolerance statistics .025(25%), .056(56%) and .028(28%) respectively has the variance of these independent variables were share with other independent variables. Another statistics used for multi Collinearity is the variance inflation factor, which is just the reciprocal tolerance of statistics. VIF provides an index that measures how much the variance (the square of the estimates SD) of an estimated regression coefficient is increased because of the Collinearity. A VIF of greater than 5 is generally considered evidence of multi Collinearity. If we divide $1 / R^2$, we will get (1.1198) which is exactly same as the VIF statics shown above (*see* table 1.6).Hence, the null hypothesis is rejected and there exists hierarchical significant relationship among the synchronous e learning performance and thinking skills of elementary students. The earlier researchers (Blakemore & Choudhury, 2006; Broadbent & Poon, 2015; Petchtone & Sumalee, 2015) supported this result and found synchronous e-learning has significant effect on learning performance over traditional group participants. The details of the regression model is interpreted in figure 4.2.1 a, b & c for asynchronous e learning performance, convergent thinking, divergent thinking, and creative thinking of elementary school students.

The regression line is obtained using the method of least squares. Any line y = a + bx that we draw through the points gives a predicted or fitted value of y for each value of x in the data set. For a particular value of x the vertical difference between the observed and fitted value of y is known as the deviation, or residual. The method of least squares finds the values of a and b that minimize the sum of the squares of all the deviations. The equation of a straight line is given by y= a + bx, where the coefficients a and b are the intercept of the line on the y axis and the gradient, respectively. The equation of the regression line for the synchronous e-learning performance & convergent thinking skills, synchronous e-learning performance &divergent thinking skills, synchronous e-learning performance &creative thinking skills data is as follows: In synchronous e-learning performance = 46.62 + (1.47 × convergent thinking skills) and synchronous e-learning performance = 47.16 + (1.47 × divergent thinking skills) (calculated using the method of least squares, which is described below). The gradient of this line is 1.47, which indicates that for an increase of convergent thinking skills the expected increase in synchronous e-learning performance. Similarly, the synchronous e-learning performance = 41.53 + (2.15 × creative thinking skills). Here, the gradient of this line is 2.15, which indicates that for an increase of creative thinking skills the expected increase in synchronous e-learning performance.

Figure 1. a, b & c for asynchronous e learning performance, convergent thinking, divergent thinking, and creative thinking of elementary school students

Fig 4.2.1 a Synchronous e learning performance, convergent thinking
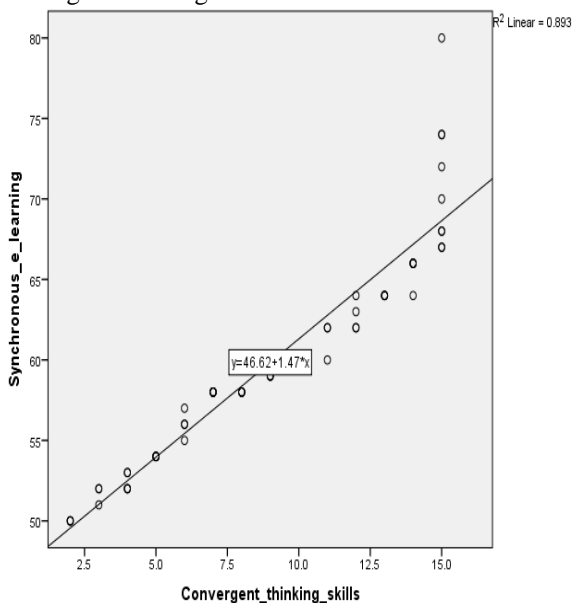
Fig 4.2.1 b Synchronous e learning performance, divergent thinking
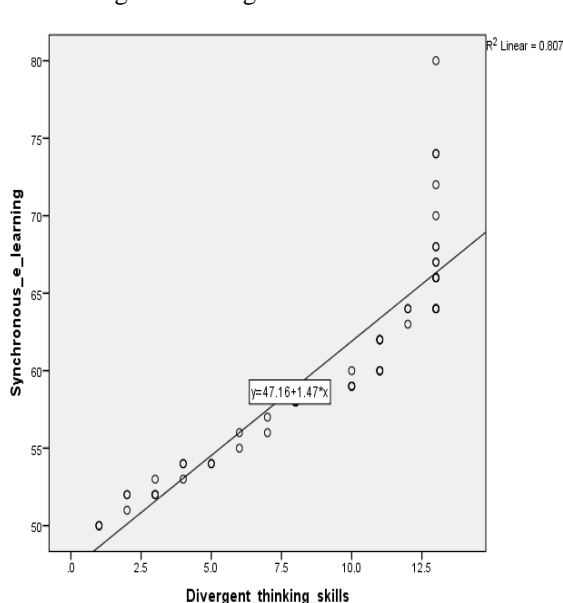
Fig 4.2.1 c Synchronous e learning performance, creative thinking
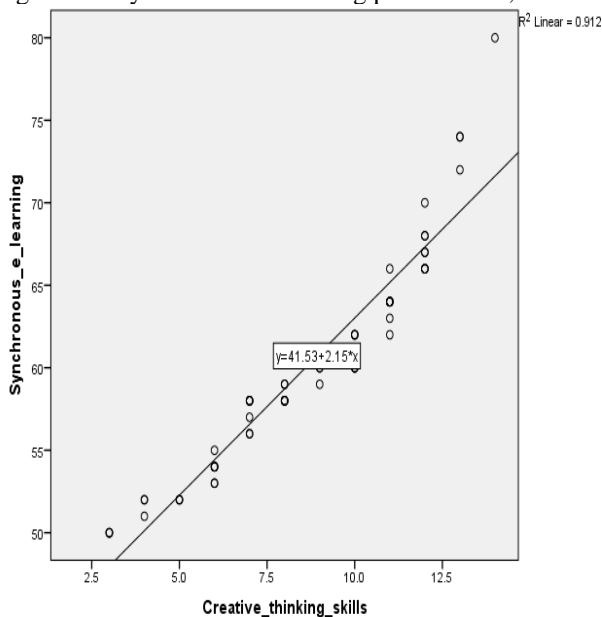
Testing of Hypothesis 2: There is no hierarchical significant relationship among the synchronous e-learning performance and executive functions of elementary students

Table 2.1 Mean and SD of Synchronous e-learning performance, working memory, self-monitoring &task initiation

	N	Mean	SD
Synchronous e-learning	60	60.08	6.606
Executive Functions			
Working Memory	60	13.08	2.309
Self-monitoring	60	9.07	1.645
Task Initiation	60	10.10	2.549

Table 2.1 reveals the Mean, Standard Deviation (SD) of post-test score of synchronous group of participants. The post-test mean and SD of synchronous e-learning group participants was post-test was (mean= 60.08 & SD = 6.606), working memory mean and SD was (mean= 13.08 & SD= 2.309) and self-monitoring mean and SD

was (mean= 9.07 & SD= 1.645) and task initiation was (mean= 10.10 & SD= 2.549). However, the mean and SD of working memory was better over both the self-monitoring and task initiation.

Table 2.2 R, R^2, adjusted R^2 and Durbin-Watson of Synchronous e-learning working memory, self-monitoring, task initiation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.810^a	.655	.649	3.911	.655	110.318	1	58	.000	
2	.946^b	.895	.891	2.178	.240	130.052	1	57	.000	
3	.963^c	.928	.924	1.816	.033	25.937	1	56	.000	.479

a. Predictors: (Constant), Working Memory
b. Predictors: (Constant), Working Memory, Self-monitoring
c. Predictors: (Constant), Working Memory, Self-monitoring, Task Initiation
d. Dependent Variable: Synchronous e-learning

In table 2.2 the column labelled R are the values of the multiple correlation coefficients between the predictors and the outcome. When convergent thinking skills, divergent thinking skills, creative thinking skills were used as the predictors, this is the simple correlation between synchronous e-learning and, working memory (0.810), working memory, self-monitoring (.946) and working memory, self- monitoring and task initiation (.963).The next column gives us a value of R^2, which is a measure of how much of the variability in the outcome is accounted for by the predictors. For the first model, its value is 0.893, which means that working memory accounts for 65.5% of the variation in synchronous e- learning. However, for the final model (model 3), this value increases to 0.924 or 92.4% of the variance in synchronous e learning. Therefore, whatever variables enter the model in block 2 account for an extra (92.8−65.5) 27.3% of the variance in synchronous e-learning scores (this is also the value in the column labelled R−square change but expressed as apercentage).The adjusted R^2 gives idea of how well the model generalizes and ideally, it would like its value to be the same, or very close to, the value of R^2. In this table, the difference for the final model is a fair bit (0.928 – 0.924= 0.004or 0.04%). This shrinkage means that if the model were derived from the population rather than a sample it would account for approximately 0.04% less variance in the outcome.The Durbin-Watson tests statistics identified the correlations between errors. Specifically, it tests whether adjusted residual are correlated. In short, it assessed the assumption of independent errors. The tests statistics can verify between 0 and 4 with a value of two meaning that the residuals are correlated. A value greater than 2 indicates a negative correlation between adjusted and residuals whereas a value below 2 indicated a positive correlations. The closer to 2 that the value is better and for this data the value is .479 which is closer to 2 that the assumption has almost certainly been met.

Table 2.3 ANOVA of Synchronous e-learning performance, convergent thinking, divergent thinking, and creative thinking of elementary school students

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1687.418	1	1687.418	110.318	.000^b
	Residual	887.165	58	15.296		
	Total	2574.583	59			
2	Regression	2304.240	2	1152.120	242.916	.000^c
	Residual	270.344	57	4.743		
	Total	2574.583	59			
3	Regression	2389.816	3	796.605	241.438	.000^d
	Residual	184.768	56	3.299		
	Total	2574.583	59			

a. Dependent Variable: Synchronous e-learning

Table 2.3 reveals the output contains an analysis of variance (ANOVA) that tests whether the model is significantly better at predicting the outcome than using the mean as a 'best guess'. Specifically, the *F*−ratio represents the ratio of the improvement in prediction that results from fitting the model (labelled 'Regression' in the table), relative to the inaccuracy that still exists in the model (labelled 'Residual' in the table).

If the improvement due to fitting the regression model is much greater than the inaccuracy within the model then the value of F will be greater than 1 and SPSS calculates the exact probability of obtaining the value of F by chance. For the initial model the F−ratio $(1, 58)$ = 110.318 p< .05. For the second model the value of F $(2, 57)$ =242.916, which is also highly significant ($p < .05$), and in the final model the F $(3, 56)$ =241.438, which is also highly significant ($p < .05$). We can interpret these results as meaning that the final model significantly improves our ability to predict the outcome variable.

Table 2.4 Coefficient[a] Synchronous e-learning performance, working memory, self-monitoring & task initiation

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	29.782	2.929		10.169	.000		
	Working Memory	2.316	.221	.810	10.503	.000	1.000	1.000
2	(Constant)	25.731	1.669		15.416	.000		
	Working Memory	-.038	.240	-.013	-.160	.873	.261	3.827
	Self-monitoring	3.844	.337	.958	11.404	.000	.261	3.827
3	(Constant)	33.486	2.063		16.230	.000		
	Working Memory	-.897	.262	-.314	-3.427	.001	.153	6.540
	Self-monitoring	2.144	.436	.534	4.913	.000	.108	9.222
	Task Initiation	1.871	.367	.722	5.093	.000	.064	15.682

Dependent Variable: Synchronous e-learning

In table 2.4 the multiple regressions model takes form of an equation that contains a coefficient (b) for each predictor. The first part of the table gives us estimates for these b values and these values indicate the individual contribution of each predictor to themodel.

The b values tell us about the relationship between synchronous e-learning performance and each predictor. If the value is positive, we can tell that there is a positive relationship between the predictor and the outcome whereas a negative coefficient represents a negative relationship. For the data both predictors have, positive b values indicating positive relationships but a predictor like self-monitoring indicated negative. Therefore, as working memory increases, synchronous e-learning performance increased and as task initiation, increase so does synchronous e learning performance. The b values also tell us to what degree each predictor affects the outcome if the effects of all other predictors are heldconstant.

Each of these beta values has an associated standard error indicating to what extent these values would vary across different samples, and these standard errors are used to determine whether the b value differs significantly from zero (using the t-statistic that you came across last year). Therefore, if the t-test associated with a b value is significant (if the value in the column labelled Sig. is less than 0.05) then that predictor is making a significant contribution to the model. The smaller the value of significant (and the larger the value of t) greater the contribution of that predictor. For this model, working memory, $t(158)$ $(10.169+10.503)$ = 10.672, $p <.05$, and self-monitoring, $t(157)$ =11.404, $p < .05$) are significant predictors of synchronous e-learning performance. From the magnitude of the t-statistics we can see that the Synchronous e-learning performance had slightly more impact than task initiation $t(156)$ = 5.093, $p = .05$).

The b values and their significance are important statistics to look at; however, the standardized versions of the b values are easier to interpret because they are not dependent on the units of measurement of the variables. The standardized beta values are provided by SPSS and they tell us the number of standard deviations that the outcome will change because of one standard deviation change in the predictor. The standardized beta values) are all measured in standard deviation units and so are directly comparable: therefore, they provide a better insight into the 'importance' of a predictor in the model. The standardizedbeta (β) values for convergent thinking skills is 0.503 p <.05, divergent thinking skills is -0.558 p<.05 and for creative thinking 0.999 p<.05. This tells us that Comparable: therefore, they provide a better insight into the 'importance' of a predictor in the model. The standardized beta (β) values for working memory is -0.314 p <.05, self-monitoring is 0.534 p<.05 and for task initiation 0.722 p<.05. This tells us that working memory, self-monitoring, and task initiation has statistically significant impact in the model.

Table 2.5 Excluded variables[a] for Synchronous e-learning performance, working memory, self-monitoring, task initiation

Model		Beta In	T	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Self-monitoring	.958[b]	11.404	.000	.834	.261	3.827	.261
	Task Initiation	1.255[b]	11.586	.000	.838	.154	6.509	.154
2	Task Initiation	.722[c]	5.093	.000	.563	.064	15.682	.064

a. Dependent Variable: Synchronous e-learning
b. Predictors in the Model: (Constant), Working Memory
c. Predictors in the Model: (Constant), Working Memory, Self-monitoring

Table 2.6 Collinearity Diagnostics[a] Synchronous e-learning performance, working memory, self-monitoring, and task initiation

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Working Memory	Self-monitoring	Task Initiation
1	1	1.985	1.000	.01	.01		
	2	.015	11.514	.99	.99		
2	1	2.977	1.000	.00	.00	.00	
	2	.019	12.486	.99	.06	.08	
	3	.004	26.354	.00	.94	.92	
3	1	3.962	1.000	.00	.00	.00	.00
	2	.032	11.173	.27	.00	.00	.04
	3	.004	30.248	.02	.63	.30	.01
	4	.002	48.546	.72	.36	.70	.96

a. Dependent Variable: Synchronous e-learning

Collinearity is a phenomenon in which one predictor variable in a multiple regression model can be linearly predicted from the others with a substantial degree of accuracy. Here, there are two statistics one is tolerance and other is VIF (*see* table 4.3.5 & 4.3.6). In tolerance statistic $1-R^2$ (R^2 is the amount of variance in dependent variable in a multiple regression explained by a combination of all of the independent variables). If the tolerance is below .20 it means at least 80 % of the variance of this independent variable is share with some other independent variables. It means that the multiple correlation of the other independent variable with this independent variable is at least .90 (because $.9 \times .9 = .81$). In the recent data the tolerance of convergent thinking skill .100 is just above .2 similarly in the final model 3 convergent thinking skill, divergent thinking skills and creative thinking skill tolerance statistics .064(64%), .261(26%) and .064(64%) respectively has the variance of these independent variables were share with other independent variables.

Another statistics used for multi Collinearity is the variance inflation factor, which is just the reciprocal tolerance of statistics. VIF provides an index that measures how much the variance (the square of the estimates SD) of an estimated regression coefficient is increased because of the Collinearity. A VIF of greater than 5 is generally considered evidence of multi Collinearity. If we divide $1/R^2$ we will get (1.52671756) which is exactly same as the VIF statics shown above.

Hence, the null hypothesis is rejected and there exists hierarchical significant relationship among the synchronous e-learning performance and executive functions of elementary students. The earlier researchers (Becker, Miao, Duncan & McClelland, 2014; Thomson & Gathercole, 2006) supported this result found synchronous e learning has significant effect on learning performance over traditional group participants.

The regression line is obtained using the method of least squares. Any line y = a + bx that we draw through the points gives a predicted or fitted value of y for each value of x in the data set. For a particular value of x the vertical difference between the observed and fitted value of y is known as the deviation, or residual. The method of least squares finds the values of a and b that minimize the sum of the squares of all the deviations. The equation of a straight line is given by y= a + bx, where the coefficients a and b are the intercept of the line on the y axis and the gradient, respectively. Figure 2 a, b & c for synchronous e-learning performance, working memory, self-monitoring and task initiation of elementary school students.

Fig4.3.1a Synchronous e learning performance, working memory
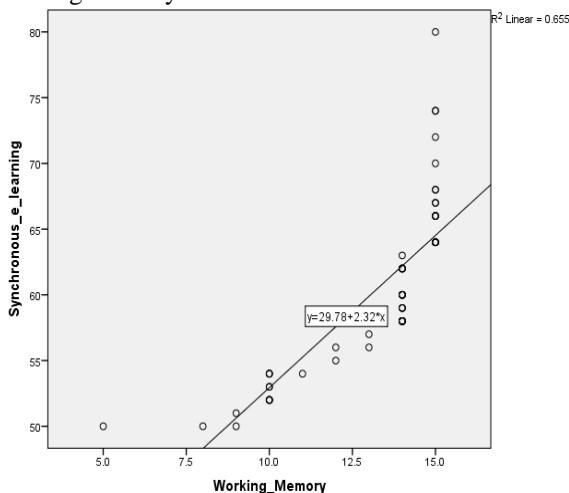
Fig4.3.1b Synchronous e learning performance, self-monitoring
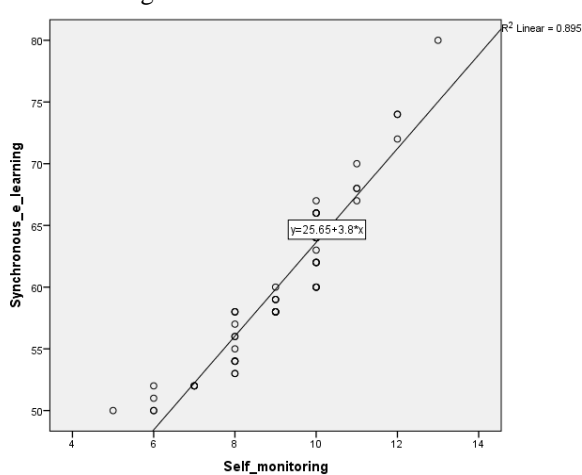
Fig4.3.1cSynchronous e learning performance, task initiation
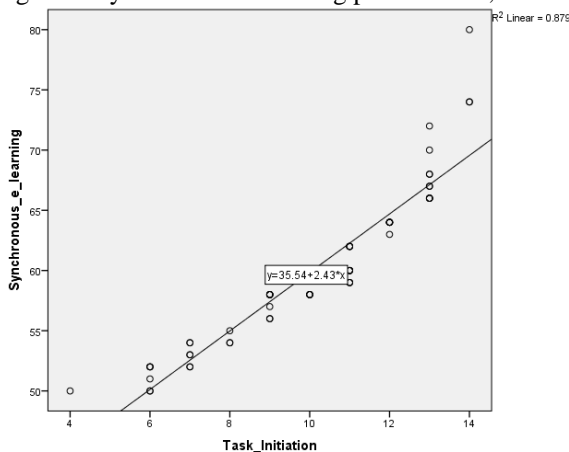
The equation of the regression line for the synchronous e-learning performance & convergent thinking skills, synchronous e-learning performance &divergent thinking skills, synchronous e-learning performance &creative thinking skills data is as follows: In synchronous e-learning performance = 28.78 + (2.32 × working memory) and synchronous e-learning performance = 25.65+ (3.8 × self- monitoring) (calculated using the method of least squares, which is described below). The gradient of this line were 2.32 & 3.8 indicated that for an increase of convergent thinking skills the expected increase in synchronous e-learning performance. Similarly, the synchronous e-learning performance = 35.54 + (2.43 ×Task Initiation). Here, the gradient of this line is 2.15, whichindicates that for an increase of creative thinking skills the expected increase in synchronous e-learning performance. The details of the regression model is interpreted in figure 4.3.1 a, b & c for asynchronous e learning performance, working memory, self-monitoring and task initiation of elementary school students (*see* fig 2).

Testing of Hypothesis 3: There is no hierarchical significant relationship among the synchronous e-learning performance and attention benefits of elementary students

Table 3.1 Synchronous e-learning attention time span, attention representing, attention analyzing

	N	Mean	SD
Synchronous e-learning Attention Benefits	60	60.08	6.606
Attention time Span	60	8.55	3.938
Attention Representing	60	9.63	3.162
Attention Analyzing	60	6.80	2.979

Table 3.1 reveals the Mean, Standard Deviation (SD) of post-test score of synchronous group of participants. The post-test mean and SD of synchronous e-learning group participants was post-test was (mean= 60.08 & SD = 6.606) Attention Time Span Mean and Standard Deviation (SD) was (mean= 8.55 & SD= 3.938) and Attention Representing Mean and Standard Deviation (SD) was (mean= 9.63 &SD= 3.162) and Attention Analyzing was (mean= 6.80 &SD= 3.162). However, the Mean and Standard Deviation of Attention Representing was better over both the Attention Time Span and Attention Analyzing.

Table 3.2 R, R², adjusted R² and Durbin-Watson of Synchronous e-learning attention time span, attention representing, attention analyzing

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.961a	.924	.923	1.837	.924	705.210	1	58	.000	
2	.969b	.938	.936	1.670	.014	13.194	1	57	.001	
3	.972c	.945	.942	1.597	.006	6.284	1	56	.015	.745

a. Predictors: (Constant), Attention time Span

b. Predictors: (Constant), Attention time Span, Attention Representing

c. Predictors: (Constant), Attention time Span, Attention Representing, Attention Analysing

d. Dependent Variable: Synchronous e-learning

In table 3.2 the column labelled R are the values of the multiple correlation coefficients between the predictors and the outcome. When convergent thinking skills, divergent thinking skills, creative thinking skills were used as the predictors, this is the simple correlation between synchronous e-learning and, attention time span (0.961),attention time span, attention representing (0.969) and attention time span, attention representing and attention analyzing (.972).

The next column gives us a value of R², which is a measure of how much of the variability in the outcome is accounted for by the predictors. For the first model, its value is 0.924, which means that convergent thinking skills accounts for 92.4% of the variation in synchronous e- learning. However, for the final model (model 3), this value increases to 0.942 or 94.2% of the variance in synchronous e learning. Therefore, whatever variables enter the model in block 2 account for an extra (94.5-92.4) 2.1% of the variance in synchronous e-learning scores (this is also the value in the column labelled R−square change but expressed as a percentage.

The adjusted R² gives idea of how well the model generalizes and ideally, it would like its value to be the same, or very close to, the value of R². In this table, the difference for the final model is a fair bit (0.945 – 0.942= 0.3 or 0.3%). This shrinkage means that if the model were derived from the population rather than a sample it would account for approximately 0.3% less variance in the outcome.

The Durbin-Watson tests statistics identified the correlations between errors. Specifically, it tests whether adjusted residual are correlated. In short, it assessed the assumption of independent errors. The tests statistics can verify between 0 and 4 with a value of two meaning that the residuals are correlated. A value greater than 2 indicates a negative correlation between adjusted and residuals whereas a value below 2 indicated a positive correlations. The closer to 2 that the value is better and for this data the value is .745 which is closer to 2 that the assumption has almost certainly been met.

Table 3.3 ANOVA of Synchronous e-learning, attention time span, attention representing, attention analyzing of elementary school students

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2378.928	1	2378.928	705.210	.000b
	Residual	195.655	58	3.373		
	Total	2574.583	59			
2	Regression	2415.705	2	1207.853	433.336	.000c
	Residual	158.878	57	2.787		
	Total	2574.583	59			
3	Regression	2431.736	3	810.579	317.768	.000d
	Residual	142.848	56	2.551		
	Total	2574.583	59			

a. Dependent Variable: Synchronous e-learning

b. Predictors: (Constant), Attention time Span

c. Predictors: (Constant), Attention time Span, Attention Representing

d. Predictors: (Constant), Attention time Span, Attention Representing, Attention Analysing

The output contains an analysis of variance (ANOVA) that tests whether the model is significantly better at predicting the outcome than using the mean as a 'best guess'. Specifically, the F-ratio represents the ratio of the improvement in prediction that results from fitting the model (labelled 'Regression' in the table), relative to the inaccuracy that still exists in the model (labelled 'Residual' in the table).

If the improvement due to fitting the regression model is much greater than the inaccuracy within the model then the value of F will be greater than 1 and SPSS calculates the exact probability of obtaining the value of F by chance. For the initial model the F−ratio $(1, 58) = 705.210$ p< .05, which is very unlikely to have happened by chance ($p < .001$). For the second model the value of F $(2, 57) = 433.336$, which is also highly significant ($p < .05$), and in the final model the F $(2, 56) = 317.768$, which is also highly significant ($p < .05$). We can interpret these results as meaning that the final model significantly improves our ability to predict the outcome variable (*see* table 4.4.3)

Table 3.4 Coefficients of Synchronous e-learning attention time span, attention representing, attention analyzing of elementary school students

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	46.296	.571		81.112	.000		
	Attention time Span	1.613	.061	.961	26.556	.000	1.000	1.000
2	(Constant)	43.377	.957		45.345	.000		
	Attention time Span	.856	.215	.511	3.977	.000	.066	15.221
	Attention Representing	.974	.268	.466	3.632	.001	.066	15.221
3	(Constant)	41.990	1.069		39.265	.000		
	Attention time Span	1.109	.229	.661	4.836	.000	.053	18.871
	Attention Representing	1.616	.362	.773	4.459	.000	.033	30.362
	Attention Analyzing	-1.023	.408	-.461	-2.507	.015	.029	34.164

    a.   Dependent Variable: Synchronous e-learning

In multiple regressions, the model takes the form of an equation that contains a coefficient (b) for each predictor. The first part of the table gives us estimates for these b values and these values indicate the individual contribution of each predictor to the model.

The b values tell us about the relationship between synchronous e-learning performance and each predictor. If the value is positive, we can tell that there is a positive relationship between the predictor and the outcome whereas a negative coefficient represents a negative relationship. For the data both predictors have, positive b values indicating positive relationships but a predictor like divergent thinking indicated negative. So, as convergent thinking skills increases, synchronous e-learning performance increases and as creative thinking, increase so does synchronous e-learning performance. The b values also tell us to what degree each predictor affects the outcome if the effects of all other predictors are held constant (*see* table 3.4).

Each of these beta values has an associated standard error indicating to what extent these values would vary across different samples, and these standard errors are used to determine whether the b value differs significantly from zero (using the t-statistic that you came across last year). Therefore, if the t-test associated with a b value is significant (if the value in the column labelled Sig. is less than 0.05) then that predictor is making a significant contribution to the model. The smaller the value of Sig. (and the larger the value of t) the greater the contribution of that predictor. For this model, attention time span, t (158) (81.112+26.556) = 107.668, p <.05, and attention representing, t (157) = 39.265, $p < .05$) are significant predictors of synchronous e-learning performance. From the magnitude of the t-statistics we can see that the synchronous e-learning performance had slightly more impact than attention analysing t (156) = -2.507, $p = .05$).

The b values and their significance are important statistics to look at; however, the standardized versions of the b values are easier to interpret because they are not dependent on the units of measurement of the variables. The standardized beta values are provided by SPSS and they tell us the number of standard deviations that the outcome will change because of one standard deviation change in the predictor. The standardized beta values) are all measured in standard deviation units and so are directly comparable: therefore, they provide a better insight into the 'importance' of a predictor in the model. The standardized beta (β) values for attention time span is 0.053 p <.05, attention representing is 0.033 p<.05 and for attention analyzing 0.029 p<.05. This tells us that

convergent thinking skills, divergent thinking skills, creative thinking skills have   statistically significant impact in the model.

Table 3.5 Excluded Variablesᵃ Synchronous e-learning attention time span, attention representing, attention analyzing

Model		Beta In	T	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Attention Time Span	.466ᵇ	3.632	.001	.434	.066	15.221	.066
	Attention Representing	.118ᵇ	.786	.435	.104	.058	17.127	.058
2	Attention Analyzing	-.461ᶜ	-2.507	.015	-.318	.029	34.164	.029

a. Dependent Variable: Synchronous e-learning

b. Predictors in the Model: (Constant), Attention time Span

c. Predictors in the Model: (Constant), Attention time Span, Attention Representing

Table 3.6 Collinearity Diagnosticsᵃ Synchronous e-learning attention time span, attention representing, attention analyzing

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Attention time Span	Attention Representing	Attention Analyzing
1	1	1.910	1.000	.05	.05		
	2	.090	4.597	.95	.95		
2	1	2.900	1.000	.01	.00	.00	
	2	.096	5.500	.33	.04	.00	
	3	.004	27.248	.66	.96	1.00	
3	1	3.878	1.000	.00	.00	.00	.00
	2	.114	5.833	.23	.01	.00	.00
	3	.005	26.745	.10	.98	.07	.24
	4	.002	42.918	.67	.00	.93	.75

a. Dependent Variable: Synchronous e-learning

Collinearity is a phenomenon in which one predictor variable in a multiple regression model can be linearly predicted from the others with a substantial degree of accuracy. Here there are two statistics one is tolerance and other is VIF. In tolerance statistic $1-r^2$ (r^2 is the amount of variance in dependent variable in a multiple regression explained by a combination of all of the independent variables). If the tolerance is below .20 it means, at least 80 % of the variance of this independent variable is share with some other independent variables. It means that the multiple correlation of the other independent variable with this independent variable is at least .90(because .9*.9=.81).in the recent data the tolerance of convergent thinking skill .100 is just above .2 similarly in the final model 3 convergent thinking skill, divergent thinking skills and creative thinking skill tolerance statistics .025(25%), .052(52%) and .028(28%) respectively has the variance of these independent variables were share with other independent variables (*see* table 4.4.5).

Another statistics used for multi Collinearity is the variance inflation factor, which is just the reciprocal tolerance of statistics. VIF provides an index that measures how much the variance (the square of the estimates SD) of an estimated regression coefficient is increased because of the Collinearity. A VIF of greater than 5 is generally considered evidence of multi Collinearity. If we divide $1/R^2$ we will get (1.1198) which is exactly same as the VIF statics shown above.

Hence, the null hypothesis is rejected and there exists hierarchical significant relationship among the synchronous and asynchronous e-learning performance and attention benefits of elementary students. The earlier researchers (e.g. Salo, Salmela, Salmi, Numminen & Alho, 2017) supported this result found synchronous e-learning has significant effect on learning performance over traditional group participants. The regression line is obtained using the method of least squares. Any line y = a + bx that we draw through the points gives a predicted or fitted value of y for each value of x in the data set. For a particular value of x the vertical difference between the observed and fitted value of y is known as the deviation, or residual. The method of least squares finds the values of a and b that minimize the sum of the squares of all the deviations. The equation of a straight line is given by y= a + bx, where the coefficients a and b are the intercept of the line on the y axis and the gradient, respectively.

Figure 3 a, b & c for synchronous e learning performance, attention time span, attention representing, attention analyzing of elementary school students.

Fig4.4.1 a Synchronous e learning performance, attention time span
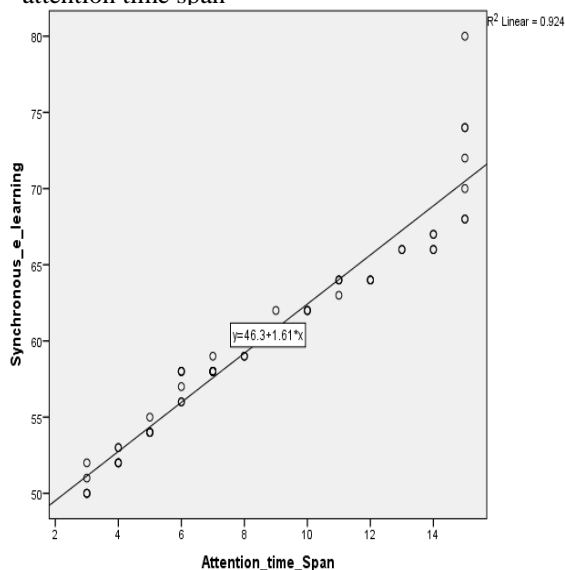
Fig4.4.1 b Synchronous e learning performance, attention representing
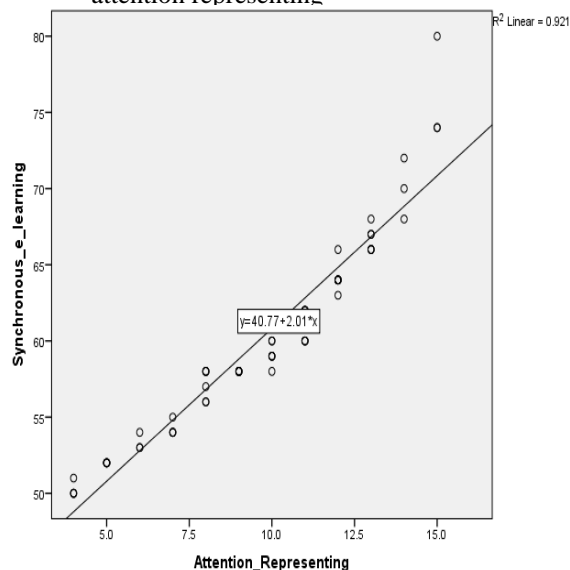
Fig 4.4.1 c Synchronous e learning performance, attention analyzing
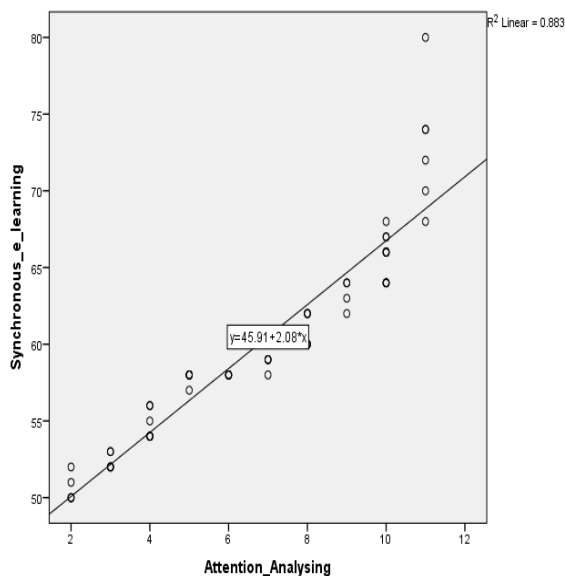
The equation of the regression line for the synchronous e-learning performance & convergent thinking skills, synchronous e-learning performance &divergent thinking skills, synchronous e-learning performance &creative thinking skills data is as follows: In synchronous e-learning performance = 46.3 + (1.61 ×Attention Time Span) and synchronous e-learning performance = 40.77+ (2.01 ×Attention Representing) (calculated using the method of least squares, which is described below). The gradient of this line is 1.47, which indicates that for an increase of convergent thinking skills the expected increase in synchronous e-learning performance. Similarly, the synchronous e-learning performance = 45.91 + (2.08× Attention Analysing). Here, the gradient of the lines are 1.61, 2.01 and 2.08 respectively which indicates that for an increase of creative thinking skills the expected increase in synchronous e-learning performance (*see* fig 4.4). The details of the regression model is interpreted in figure 4.4.1 a, b & c for asynchronous e learning performance, attention time span, attention analyzing and attention representing of elementary school students.

FINDINGS AND DISCUSSION

The findings of the present study reveal that the thinking skill was hierarchical and significantly related to synchronous e-learning performance of the students. The independent variables like convergent thinking skills,

divergent thinking skills and creative thinking skills of the experimental group participants were directly correlated with their learning performance because Durbin- Watson value is (.469) was nearby .2. This finding was equivalent to the earlier researchers by (e.g. Blakemore & Choudhury, 2006; Broadbent & Poon, 2015; Canvas, 2009; Petchtone & Sumalee, 2015; Songkram, 2015; Vainikainen, Hautamaki, Hotulainen & Kupiainen, 2015) found that formal thinking of an individual's level were statistically significant factors for verbal and quantitative reasoning. It was found that the Executive Functions was hierarchical and significantly related to synchronous e-learning performance of the students. The independent variables like working memory, self-monitoring and task initiation of the experimental group participants were directly correlated with their learning performance because Durbin-Watson value is (.479) was moreover (.2). This result was supported by earlier researchers (e.g. Becker, Miao, Duncan & McClelland, 2014; Bull, Espy & Wiebe, 2008; Kane & Engle, 2002; Rued, Posner & Rothbart, 2010; Thomson & Gathercole, 2006) found that executive functions of working memory and inhibition plays a significant role in learning situations. It was found that the Attention Benefits was hierarchical and significantly related to Synchronous e-learning performance of the students. The independent variables like attention time span, attention representing and attention analyzing of the experimental group participants were directly correlated with their learning performance because Durbin-Watson value is (.745). This finding was equivalent to the earlier researchers by (e.g. Cowan, Nugent, Elliot, Ponomarev & Saults, 1999; Perez & Solis, 2007; Salo, Salmela, Salmi, Numminen & Alho, 2017) found that though attention, working memory and executive functions are separated but it sustained a fast improvement in performance of the learners. The study claimed that students perceived benefits to synchronous e-learning environment and this result was supported by (Giesbers, Rienties, Tempelaar & Gijselaers, 2013; Harlow & Bacco, 2011; Stewart; Dewiyanti, Gruwel, Jochems & Broers, 2004), but the results was not corroborated by the researchers (Bower, Dalgarno, Kennedy, Lee & Kenny, 2015; Granda, Garcia, Nuno & Suarez, 2010) found that the learning outcomes before, during and after blended synchronous learning lessons was not effective for the learners. Now question may be raised why synchronous e-learning performance was useful for the participants. Does the WhatsApp assisted learning is more effective approach? To answers these questions the present study was undertaken by the researcher.

In Indian context, secondary schools students and their parents have smartphones to use which creates a sound environment among the learners to get self-acquainted with new knowledge or informations by themselves.To some extend a question may arise is synchronous e-learning applicable in all Indian secondary schools, if so to what extent, if not why?This recent study clarify that WhatsApp was really an innovative instructional tool, which motivated the learners and encourage to perceived the real learning linkage between different concepts which are accepted and supported by (Szeto, 2014 &Wang, 2008) found that synchronous e-learning styles are helpful to compared e-learners with their academic performance of the learners. It is so applicable because with the implementation of new techniques and teaching aids in classroom creates an interesting settings for the students to learn or understand the concepts more clearly. It motivates and attracts the learners to learn the same thing through different modes or styles i.e. why synchronous e-learning is applicable in all Indian secondary schools. When we are discussing about an online learning in relations to the present context a question may raise that does WhatsApp is accessible in all Indian schools during the formal schooling time, if yes, then how it is possible? Yes, WhatsApp learning can be made accessible in all Indian secondary schools during the formal schooling time as we know now in the present time all are familiar with the smart electronic gadgets and how, where and why to use it. The learning environment in Indian secondary schools was not fully technology supportive where students were getting traditional lectures for their clarification of concept. In this context, the researcher thought of applying a new online and offline learning style i.e. synchronous e-learning (WhatsApp) in the experimental class. During formal schooling hours if we introduce WhatsApp to students it can make the learning process more interesting and affordable to all equally. To know the significant effect of WhatsApp supported learning the researcher has undertaken the present study. During our emergency time, WhatsApp plays an important role in sending and receiving messages, information's, documents or any other related materials and it saves our time, energy and money. In present scenario many changes has come up in the real teaching learning process so, to know more about those related topic we have to go through different studies and sometimes a question may raise that in present world, how the researchers are applying WhatsApp in the formal learning process and is it useful for both formal and non-formal situations? When we looked into the present situation many options are available for conducting or providing information to the learners. As we know many changes has come up which leads to drastic mobility among different parts of the world. Now, in this modern era learning can be termed by different meaning like e.g. blended learning, flipped classroom learning, hybrid learning and synchronous e-learning etc. For understanding the new changes in the teaching learning situation the present study has been undertaken. Many researchers are applying WhatsApp in their research study areas linking up with different areas of interest. The present study was supported by (Asterhan & Tammy, 2011; Bower, 2011; Chang & Wu, 2015) found that online discussion has significant effect over face to face discussion format. During the formal learning process WhatsApp can be implemented for providing study

materials, pdf files and information's to the students. It is an online mode of learning styles which is very useful in teaching learning situation as it provides a flexible freedom to everyone to use it at his/her own pace. Yes, WhatsApp learning is applicable in formal as well as non-formal situation because it is an online and offline mode of learning styles.

Different researchers studies leads to different directions and to know it deeply some questions can be in this way- Does the results conflict with other researchers findings, if so, then how many research from Indian counterparts and how many from abroad? Yes, to some extend conflicts arises between the researchers of different countries. But there is no single study supported from India is found in regards to the result for the present study in using WhatsApp. On the other hand in some European and American countries supports (Giesbers, Rienties, Tempelaar & Gijselaers, 2013; Harlow & Bacco, 2011) Stewart; Dewiyanti, Gruwel, Jochems & Broers, 2004) found that synchronous communication can be useful for the learners as the online mode of learning through WhatsApp gives freedom to the learners to learn at his/her own pace of interest and time bound. The study claimed that thinking skill was hierarchical and significantly related to synchronous e-learning performance of the students. The independent variables like convergent thinking skill, divergent thinking skill and creative thinking skills of the experimental group participants were directly correlated with their learning performance. The findings was supported by earlier researchers (Blakemore & Choudhury, 2006; Broadbent & Poon, 2015; Canvas, 2009; Petchtone & Sumalee, 2015; Songkram, 2015; Vainikainen, Hautamaki, Hotulainen & Kupiainen, 2015) found that formal thinking of an individual's level were statistically significant factors for verbal and quantitative reasoning. The present study was Quasi Experimental Design were there was no chance of randomization in the selection of the sample unit rather it encourages the random selection of 1 or many classes. So, on the basis of the design 3 classes of 3 schools were randomly selected for traditional intervention. Somehow the researcher has tried to minimize the internal validity through ANCOVA and Regression Analysis and through motivating the students to maximum use of the WhatsApp and email during their experiment. In a synchronous e-learning experiment class all the students were not equally utilizing their thinking skill during the interventions, but the maximum students' performance became high and as a whole thinking skill of students was highly correlated with the dependent variable. However, it was also found thatthe R^2 of creative thinking was much better than divergent thinking skill and convergent thinking skill of the students. The thinking skill of the learners' performance was more skewed towards the learning performance because of WhatsApp mode of interactions and interventions as the Google era generations students were more comfortable to learn independently at their own pace and convenience. Rather formal schooling is time bound and works on parents and teachers suggestion and decision. Again, question was raised whether this ideology or intervention is applicable to all Indian schools and among all Indian class of students. The researchers are sure about the phenomena that it could be possible to implement in all the Indian schools, but if government, stakeholders, administrators, teachers, parents and students himself or herself take interest to apply in the teaching- learning process. The study claimed that the executive functions were hierarchical and significantly related to synchronous e-learning performance of the students. This result was supported by earlier researchers (e.g. Becker, Miao, Duncan & McClelland, 2014; Bull, Espy & Wiebe, 2008; Kane & Engle, 2002; Rued, Posner & Rothbart, 2010; Thomson & Gathercole, 2006) found that executive functions of working memory and inhibition plays a significant role in learning situations. The independent variables like working memory, self-monitoring and task initiation of the experimental group participants were also correlated among the learners performance respectively. It reveals that synchronous e-learning enhances the learning performance of the learners who are directly related with factors of learning styles. The recent study confined there is a significant relationship between synchronous e-learning styles with working memory, self-monitoring and task initiation learning performance of the secondary school students. This result was not supported by some earlier studies (e.g. Carlsona, Mosesb & Bretona, 2002) found that combination of inhibition and working memory do not shows any relation between EF and false belief understanding. In a synchronous and asynchronous e-learning experiment class all the students were not equally utilizing their executive function during the interventions, but the maximum students' performance became high and as a whole executive function of students was highly correlated with the dependent variable. However, it was also found that the R^2 of Task initiation was much better than working memory and self-monitoring of the students. The study claimed that the attention benefitwas hierarchical and significantly related to synchronous e-learning performance of the students. The independent variables like attention time span, attention representing and attention analyzing of the experimental group participants were also correlated among the learners performance respectively. It justify that synchronous e-learning enhances the learning performance of the learners who are directly or indirectly related with factors of learning styles. Again, question was raised whether this ideology or intervention is applicable to all Indian secondary schools or not? The researchers are sure about the phenomena that it could be possible to implement in all the Indian schools, but if government, administrators, teachers, parents and students himself or herself take interest to use it in the teaching- learning process. Also, in present time all are familiar to smart gadgets- how, where and why to use it. That is why the study claimed it is possible to implement not only in all Indian schools

but also in other countries too. This result was supported by earlier researchers (Cowan, Nugent, Elliot, Ponomarev & Saults, 1999; Perez & Solis, 2007; Salo, Salmela, Salmi, Numminen & Alho, 2017) found that though attention, working memory and executive functions are separated but it sustained a fast improvement in performance of the learners.

CONCLUSION

If we see the European, American and other advanced countries of the world, we can find that their classroom is highly assisted with all new technologies like smart classrooms, internet accessibility and different other useful gadgets. In this study, the researcher found that developing countries should adopt e-learning techniques or styles assisted learning in their classroom. Synchronous e-learning in Indian classroom is still in progress, not all the classroom of secondary schools is facilitated with smart classroom or internet connections etc. The learning environment in Indian secondary schools are not fully technology supported as, many schools are applying traditional lectures for the clarification of concepts inside the classroom. In this context, the researchers thought of applying a new online learning styles i.e. synchronous (WhatsApp) e-learning in the experimental class. To know the significant effect of WhatsApp supported learning in relations to thinking skills, executive functions and attention benefits the researcher has undertaken the present study. As a result, it was observed that technology supported learning was much better and it was supported by earlier researcher (Cheng & Wu, 2015). However, few researchers who conducted the studies in European and American countries did not support the result (Granda, Garcia, Nuno & Suarez, 2010). Now-a-days teachers are acquiring and upgrading knowledge regarding video-conferencing, using different software like IMO, Skype, Google-Duo, Orientation and Refreshers courses. The literatures found that Synchronous e-learning has significant relationship with the learning performance of school, college and university level students. It was found that there exists a significant effect of synchronous e-learning performance over traditional approach of learning among elementary students. This was because of the technology assisted Synchronous e-learning motivated the learning performance of experimental group students. The present findings can be apply in underdeveloped countries if the government, policy-makers, stakeholders, teachers, parents and students take initiative and interest to implement new style in teaching learning process. There should also be the provision of smart classrooms, internet facilities, and e-learning programs in teaching learning process. However, few researchers who conducted the studies in European and American countries did not support the result (Bower, Dalgarno, Kennedy, Lee & Kenny, 2015) found that learning outcomes before, during and after blended synchronous learning was not statistically significant approach respectively. It was found that there is a significant hierarchical relationship between synchronous learning styles with thinking skills learning performance of secondary school students. This was supported with the earlier studies conducted by most of the developed countries in the countries(Samarraie, Teo & Abbas, 2013 &Songkram, 2015). The independent variables like convergent thinking skill, divergent thinking skill and creative thinking skills of the experimental group participants were directly correlated with their learning performance. To implements the recent findings in Indian context the responsibility should be taken by Indian government, stakeholders, administrators and other authority to promote convergent thinking, divergent thinking and creative thinking by using synchronous and asynchronous e-learning modes among the learners respectively. There should be maximum utilization of virtual learning like internet, email, WhatsApp, Skype and imo etc. in teaching learning process to meet the recent results in secondary schools. It was found that there is a significant hierarchical relationship between synchronous learning styles with executive functions learning performance of secondary school students. This was supported with the earlier studies conducted by most of the developed countries in the countries (Kane & Engle, 2002; Thompson & Gathercole, 2006). The independent variables like working memory, self-monitoring and task initiation of the experimental group participants were directly correlated with their learning performance. Different strategies are available to improve executive functions (Stroop Task, Saccadic Test and Inhibitory Control) of students that could promote high performance and retention among Google generation students. It was found that there is a significant hierarchical relationship between synchronous learning styles with attention benefits learning performance of secondary school students. This was supported with the earlier studies conducted by most of the developed countries in the countries (Bosse & Valdois, 2009; Chen & Wu, 2015). The independent variables like attention time span, attention representing and attention analyzing of the experimental group participants were directly correlated with their learning performance. Different programme and policies like frequent IQ test, yoga, meditation and other co-curricular activities should be implemented in educational system to improve attention benefits of students that could be transfer into learning situation to improve the learning performance of the learners.

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TRAINING AND ORGANIZATIONAL PERFORMANCE: THE MEDIATING ROLE OF E-LEARNING IN INFORMATION TECHNOLOGY INDUSTRY – AN EMPIRICAL STUDY

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Abstract: The purpose of this research paper is to investigate the impact of training programmes on organizational performance and also to identify the mediating role of E-Learning on organizational performance using the structural equation modelling approach. The study was conducted among the 350 employees working in Information Technology industry, Chennai city. The quota sampling method was used to choose the respondents from the selected IT companies. The results of the study revealed that there is a robust relationship between the impact of training on organizational performance, and the E-Learning also mediates the impact of training on organizational performance.
Keywords: Impact of training, E-Learning, organizational performance, IT industry.

INTRODUCTION

Training is driving force of any industry which updates the human capital with latest technologies and upgrade them with required skills and abilities to perform the assigned task efficient and smarter manner. The training kindles the minds of the people so that they can apply enhanced creative and innovation in problem solving and decision-making. Training also ensures optimum utilization of all kinds of resources irrespective of any industry.

The two decade old Information Technology industry in India faced major transformations and challenges over a period of time, but still it is able to serve the major portion of Information Technology market in worldwide through the well-trained, talented and dedicated professionals. Like other industry, the technological world has its influence in IT industry also, not in tardy way, but in rapid manner. So obviously, the professionals in IT industry has to spend their considerable portion of their personal and professional time in learning the technology and acquiring the abilities through training and practice. Therefore, this study attempted to investigate the impact of training programmes on organizational performance and the mediating role of E-Learning in Information Technology industry context using Structural Equation Modeling (SEM) approach.

THEORETICAL BACKGROUND AND HYPOTHESES

This section of the research paper deals with the theoretical background and hypothesis development of the research topic.

Training and E-Learning

Training plays a key role in an organization. It has the effect on almost all Human Resource related concepts such as productivity, job performance, employee motivation, job satisfaction (Akbar Jan et al., 2015), organizational climate (Subramani et al., 2016), etc. It indirectly contributes for the organizational performance by influencing individual performance.

E-Learning ensures the company to sustain and grow in the hyper-competitive business environment. E-Learning prerequisites to be both a formally reinforced strategy and an integral part of the organization's corporate culture. The learning and development strategy of an organization must spot both employees' distinct talent development needs and the corporates' needs. The formal E-Learning strategy is a commitment to implementation of corporate training and enables measurement of returns through specific objectives. Recent studies also proved that there is a robust relationship between training through E-Learning (Pilar Jerez Gomez et al, 2006).

E-Learning and Organizational Performance

E-learning is a web-based learning ecosystem for the dissemination of information, communication, and knowledge for education and training (Cidral et al., 2018). 'E-Learning' creates 'Learning Organization'. Learning organization is the one in which people continually develop their capacity to achieve results they desire, whereby new patterns of thinking are nurtured, collective aspirations are freed and people learn to learn together (Senge, 1990). Robelo and Gomes (2011) defined the term 'learning organization' as a process or capacity within organization which enables it to acquire, access and revise organizational memory thus providing directions for organizational action. A general definition of organizational performance by Stankard (2002) noted that it is the product of interactions of different parts or units in the organization. Many earlier researches established that there is a strong relationship between learning organization and organizational performance. (Alexandra Luciana, 2013; Norashikin Hussein et al., 2014; Anna Zgrzywa-Ziemak, 2015). Chien-Pei Ko and Chen Chen Ko (2012), through their study found that training quality of e-learning has significant correlation with organizational performance.

Impact of Training on Organizational performance

Training has the specific role in the accomplishment of an organizational goal by integrating the interests of organization and the workforce (Stone, 2002). Training act as a key element in improvising the capabilities of the employees in an organization. Organizational performance is the collective form the individual performance in an organization, hence the training is imparted to the individuals in an organization to enhance the organizational performance. (Raja Abdul Ghafoor Khan et al., 2011; Mercedes Ubeda-García et al., 2013).

Conceptual Model and Hypotheses development

Based on the literature review, the conceptual model was developed by integrating the three main constructs such as impact of training, E-Learning and organizational performance and it was portrayed in Figure 1.
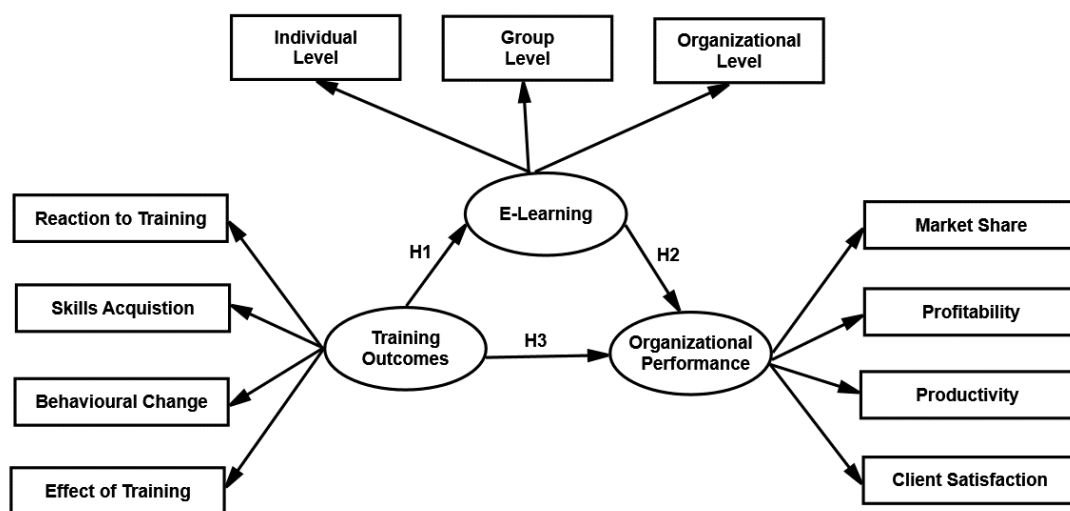
Figure 1. Conceptual Model – Integration of the constructs

The following hypotheses can be formulated based on the conceptual model shown in Figure 1.

H1: There is a relationship between the impact of training and E-Learning.
H2: There is a relationship between the E-Learning and organizational performance.
H3: There is a relationship between the impact of training and organizational performance.

METHODOLOGY

This research followed descriptive research design. Descriptive research design is used to describe the opinion of the respondents about the chosen research area. This research describes the Information Technology employees' perception towards the impact of training on organizational performance and the mediating role of E-Learning.

Data collection and Sampling design

This study utilized both primary and secondary data. The primary and secondary data was collected through survey method of data collection. The structured questionnaire was used as a data collection instrument. The universe of the study is restricted to the employees working in top two Information Technology companies as ranked by NASSCOM in 2016-2017 such as Tata Consultancy services and Infosys company branches located in

Chennai. The quota sampling technique method was adopted to choose the respondents from the population. i.e. from each company 175 employees was selected, hence the sample size of the study is 350.

Scale Development

The structure questionnaire was developed for this study and it was verified against its reliability and validity. The developed scale has four sections such as personal details, training perception scale, E-Learning scale, and organizational performance scale. The reliability of Cronbach alpha coefficient of training perception scale was 0.821, E-Learning scale was 0.792 and organizational performance scale was 0.763.

Training perception assessment scale

The training perception scale (20 items) was developed based on Kirkpatrick training evaluation model which has four levels such as reaction to training (5 items), skills acquisition (5 items), behavioural change (5 items) and effect of training (5 items). It was measured using Likert 5 point scales from 1 – Strongly Disagree, 2 – Disagree, 3- Neutral, 4- Agree and 5 –Strongly Agree.

E-Learning scale

The E-Learning scale (15 items) was developed based on Bontis et al (2002) which has three levels such as Individual level (5 items), group level (5 items), and organizational level (5 items). It was also measured using Likert 5 point scales from 1 – Strongly Disagree, 2 – Disagree, 3- Neutral, 4- Agree and 5 –Strongly Agree.

Organizational Performance scale

The organizational performance scale (20 items) was developed based on Dess and Robinson (1984) which has four levels such as market share (5 items), profitability (5 items), productivity (5 items) and customer satisfaction (5 items). It was measured using Likert 5 point scales from 1 – Very Low, 2 – Low, 3- Moderate, 4- High and 5 –Very High.

RESULTS AND DISCUSSIONS

The data analysis section of the study was further divided into two sections such as descriptive analysis and inferential analysis. The data were analyzed and the results were discussed in this section.

Descriptive Analysis

The descriptive analysis was used to describe the characteristics of the samples through sample size, minimum, maximum, range, mean, standard deviation, variance, skewness and kurtosis. It was assessed using the IBM SPSS 22.0 software package. The table 1 describes the descriptive statistics of the constructs. From the table 1, it is found that effect of training is having the highest mean of 19.877, which is followed by customer satisfaction with the mean value of 19.820. It is also found that, employees are having above the moderate level of perception on the measured constructs, since all the mean values are above 15.0.

Table 1. Descriptive statistics of the Constructs

S. No	Construct	Mean	Std. Deviation
1	Reaction to training	18.351	3.0823
2	Skills Acquisition	18.660	2.7817
3	Behavioural Change	18.503	2.0589
4	Effect of Training	19.877	2.4796
5	Individual Level	18.197	2.9462
6	Group Level	18.631	2.4527
7	Organization Level	19.617	2.3459
8	Market Share	18.860	2.7306
9	Profitability	18.991	2.6737
10	Productivity	18.766	2.0737
11	Customer Satisfaction	19.820	2.4068

(Source: Primary Data)

Inferential Analysis

The Inferential analysis was used to infer the characteristics of the population through the characteristics of the sample. Here, the Structural Equation Modeling (SEM) was adopted to infer the characterizes of population about impact of training on organizational performance and the mediating role of E-Learning using the software package known as IBM AMOS 23.0.

Structural Equation Model on Impact of training on organizational performance and the mediating role of E-Learning

Structural Equation Modeling is a tool to elicit the relationship between two or more measured variables on the latent variable. The Figure 2 portrays the Structural Equation Model which was developed based on standardized regression coefficients.
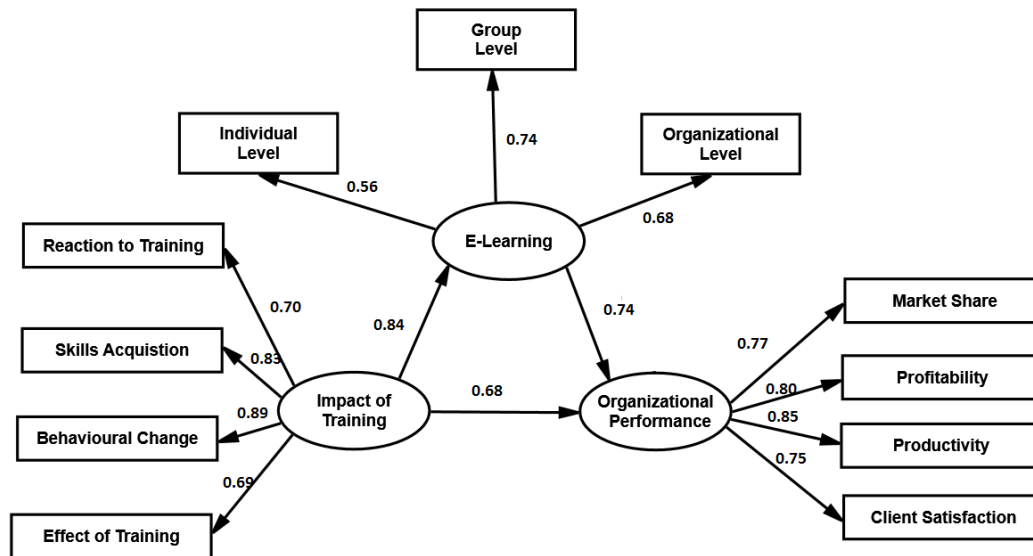
Figure 2. Structural Equation model based on Standardized coefficients

Table 2. Regression coefficients of Conceptual model

Observed Construct		Latent Construct	Unstandardized Estimate	S.E.	Standardized estimate	C.R.	p
E- Learning	<---	Impact of Training	0.884	0.072	0.841	16.243	<0.001**
Organizational Performance	<---	Impact of Training	0.727	0.092	0.676	10.389	<0.001**
Organizational Performance	<---	E-Learning	0.764	0.083	0.743	11.381	<0.001**
Skills Acquisition	<---	Impact of Training	1.122	0.064	0.829	17.485	<0.001**
Behavioural change	<---	Impact of Training	0.875	0.040	0.887	22.108	<0.001**
Reaction to training	<---	Impact of Training	1.000	-	0.702	-	-
Effect of Training	<---	Impact of Training	0.854	0.074	0.690	11.599	<0.001**
Individual Level Learning	<---	E-Learning	1.000	-	0.564	-	-
Organizational Level	<---	E-Learning	0.885	0.059	0.680	15.114	<0.001**
Group Level Learning	<---	E-Learning	1.034	0.051	0.735	20.354	<0.001**
Market Share	<---	Organizational Performance	1.000	-	0.770	-	-
Clients' Satisfaction	<---	Organizational	0.857	0.056	0.751	15.366	<0.001**

Observed Construct		Latent Construct	Unstandardized Estimate	S.E.	Standardized estimate	C.R.	p
		Performance					
Profitability	<---	Organizational Performance	1.025	0.065	0.804	15.760	<0.001**
Productivity	<---	Organizational Performance	0.835	0.041	0.850	20.391	<0.001**

The arrows between the measured variable and the latent variable depicts the path relationship, which was also summarized in table 2 along with its standardized and unstandardized regression coefficients. For example, the unstandardized regression coefficient between the impact of training and organizational performance is 0.957, which means the every unit of increase in impact of training may increase 0.957 units of organizational performance, and this hypothetical relationship is also significant at 1% level.

Table 3. Implied Correlations of the constructs

Construct	1	2	3	4	5	6	7	8	9	10	11
1. Reaction to Training	1	0.582	0.736	0.238	0.458	0.598	0.552	0.567	0.592	0.626	0.553
2. Skills Acquisition	0.582	1	0.735	0.368	0.541	0.705	0.652	0.669	0.699	0.739	0.653
3. Behavioural Change	0.736	0.735	1	0.471	0.579	0.755	0.697	0.716	0.748	0.790	0.699
4. Reaction to training	0.238	0.368	0.471	1	0.45	0.587	0.542	0.557	0.582	0.615	0.543
5. Individual Level	0.458	0.541	0.579	0.45	1	0.674	0.403	0.513	0.536	0.566	0.5
6. Group Level	0.598	0.705	0.755	0.587	0.674	1	0.5	0.668	0.699	0.738	0.653
7. Organizational Level	0.552	0.652	0.697	0.542	0.403	0.5	1	0.618	0.646	0.682	0.603
8. Market Share	0.567	0.669	0.716	0.557	0.513	0.668	0.618	1	0.588	0.736	0.578
9. Profitability	0.592	0.699	0.748	0.582	0.536	0.699	0.646	0.588	1	0.684	0.477
10. Productivity	0.626	0.739	0.790	0.615	0.566	0.738	0.682	0.736	0.684	1	0.603
11. Customer Satisfaction	0.553	0.653	0.699	0.543	0.5	0.653	0.603	0.578	0.477	0.603	1

Table 3 tabulates the implied correlation coefficient between the constructs. All the correlation coefficient values in table 3 is positive, which indicates 'positive correlation' among the chosen constructs. The correlation coefficient value more than 0.5 indicates the strong relationship between the variables. The correlation coefficient between behavioural change and productivity is 0.790, which is followed by the correlation coefficient between skills acquisition and productivity with the value of 0.739.

Table 4. Standardized Direct, Indirect and Total Effects

Construct Name	Direct Effect		Indirect Effect		Total Effect	
	E-Learning	Organizational performance	E-Learning	Organizational performance	E-Learning	organizational performance
E-Learning	--	0.743	--	--	--	0.743
Impact of Training	0.841	0.676	--	0.624	0.841	1.517

Table 4 indicates the direct, indirect and total effect of the observed constructs on latent variable. For example, the impact of training has the direct effect on organizational performance with the regression coefficient of 0.676, whereas through the E-Learning it has the total effect of regression coefficient 1.517, which indicates the E-Learning will boost-up the impact of training on organizational performance. It is also found that the E-Learning has the direct impact on organizational performance with the regression coefficient of 0.743, without the presence of impact of training, which shows that the E-Learning without appropriate training may yield the results on organizational performance, but it will be comparatively lesser than its combination with the impact of training.

Table 5: Model Fit Summary

S. No	Indices Category	Model Fitness Indices	Value	Recommended Values	Result
1.	Absolute Fit Indices	CMIN or Chi Square Value	0.184	P > 0.05 (Wheaton et al, 1977)	Absolute fit
		RMSEA (Root Mean Square Error of Approximation)	0.032	< 0.08 Browne and Cudeck (1993)	Good Fit
		GFI (Goodness of Fit Index))	0.913	> 0.90 Joreskog and Sorbom (1984)	Absolute fit
2.	Incremental Fit Indices	AGFI (adjusted Goodness of Fit Index)	0.926	> 0.90 Tanaka and Huba (1985)	Absolute fit
		CFI (Comparative Fit Index)	0.928	> 0.90 Bentler (1990)	Absolute fit
		TLI (Tucker-Lewis Index)	0.961	> 0.95 Bentler and Bonett (1980)	Absolute fit
		NFI (Normed Fit Index)	0.972	> 0.95 Bollen (1989)	Absolute fit
3.	Parsimonious fit	Chi-square / DF	2.532	2 to 5 Marsh and Hocevar (1985)	Good Fit
4.	Miscellaneous Measure	RMR (Root Mean Square Residuals)	0.037	< 0.08 (Hair et al. 2006)	Good Fit

(Source: Primary Data)

Table 5 shows the model fit summary of the conceptual model. In this table, model fit indices are divided in to four categories such as absolute fit indices, incremental fit indices, parsimonious fit indices and miscellaneous indices. As mentioned in the table 5, all the four categories of indices values are at acceptable level, hence it can be concluded that the conceptual model is found to be fit.   Therefore it is established that the there is a robust relationship between the impact of training on organizational performance and also the E-Learning mediates the impact of training on organizational performance.

CONCLUSION

The industries in the present business world faces the rapid changes because of the technological shifts and hyper competition, which demands the maintaining human intellectual up-to-date according to the trends in technological world. The Information technology industry is the spine of such changes in all the other industries. In order to provide the world class IT services, they employees working in IT industry need to be upgraded themselves with latest programming languages, software, hardware and communication devices. The knowledge and skill may be acquired through appropriate training or E-Learning or in combination of both. The results of the Structural Equation Model has the given the crystal clear information that the E-Learning has the effect on organizational performance, and it can also improvise the magnitude of effect of impact of training on organizational performance.

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UNDERSTANDING LEARNERS' PREFERENCES FOR LEARNING ENVIRONMENTS IN HIGHER EDUCATION

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Abstract: The higher education institutions (HEIs) are engaging with multi modal delivery for its courses and diversifying teaching and learning strategies. The reasons for multi modal delivery range from desire to increase enrolment to providing educational access to learners far and wide. In the university of the South Pacific (USP), learners constitute a diverse demographic and equally diverse is the learners' geographical context. However, there is a need to listen to learners' voice in light of their changing learning needs. The study examines learners' preference for learning environments with the aim to understand the reasons for their preference for a particular learning environment. The study has implications for all HEIs especially if they wish to engage learners from diverse backgrounds

Keywords: Learning and Teaching, Learning Environment, Higher Education, elearning, distance learning

Introduction

The advances in information communication and technologies (ICTs) coupled with World Wide Web have provided multimodal learning and teaching opportunities to learners and teachers across the globe in higher education arena. The print based DE was blamed for learner isolation but technology mediated DE has been credited with tackling the same issue of learner isolation with increased interaction and engagement. Traditional F2F classrooms as well as print based DE are both being renovated through technology. In line with global trends, the University of the South Pacific (USP) currently offers its courses via print (P), face-to-face (F2F/F), blended (B) and online (O) instructional delivery modes (IDMs)/learning environment (LE). However, there is a need to understand learners' perceptions towards these learning environments. This study chose the USP as the site for research.

The region of the South Pacific is geographically, culturally, economically and socially diverse. In all, some twenty-two island nations make up the list of Pacific Island Countries (PICs) (SPC website). The USP, one of the two regional universities in the world, serves its twelve member countries Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu) with a combined population of about 1.4, million extending over 32 million square kilometers of ocean.

The Context

Soon after its inception as a traditional university in 1968, USP started its extension centres in 1971 to offer print based distance education (DE) to meet the need of its people in the region. The geographical dispersion of the islands in the region necessitated the use of ICTs in DE as well as different IDMs/LEs. The use of ICT provides opportunities for both asynchronous and synchronous interaction in different LEs. Thus, the use of satellite technology, which was initially employed to deliver DE tutorials and other information and communication exchange within various USP centres and campuses is now the backbone of different LEs at USP. The first enterprise to support USP's education network (USPNet) was the Pan-Pacific Education and Communication Experiments by Satellite (PEACESAT) on Applications Technology Satellite-1 (ATS-1). The primary aim of PEACESAT was to bridge the digital divide between the PICs and assist with educational and administrative support. Since then, USP has gone through incremental subsequent developments to reach its state-of-the-art ICT facilities (Lingam, Raturi and Finau, 2015).

Lingam et al (2015) pointed out that opting for Ku band network in 2011 has helped USPNet provide more stable, efficient, faster and far reaching (for remote areas and islands) services to the region, which was otherwise not possible with the C band earlier (Figure 1). This in turn has given more learners the opportunity to experience 21st century ICT integrated pedagogies, such as REACT (Remote Education And Conferencing Tool) which is a software that allows for audio-video conferencing from a personal computer and now other web-conferencing software are being trialed out at USP. With the help of the satellite system and REACT, the web-conferencing sessions provide greater interaction opportunities between the teacher and the learners from across the region. The REACT satellite conference rooms have been established in all USP campuses and centres and the learners and the teachers gather during the designated time/schedule to meet, learn and interact. The use of REACT is given high priority by the USP's Information Technology and Services department considering such a

tool is meant to enhance learner-learner and learner-instructor interaction. However, access and internet bandwidth remains a concern for the learners in the farflung islands. Asynchronous communication through the university's Learning Management System (LMS), Moodle, emails and other social networking sites (SNS) seem to remain a more preferable mode of interaction.
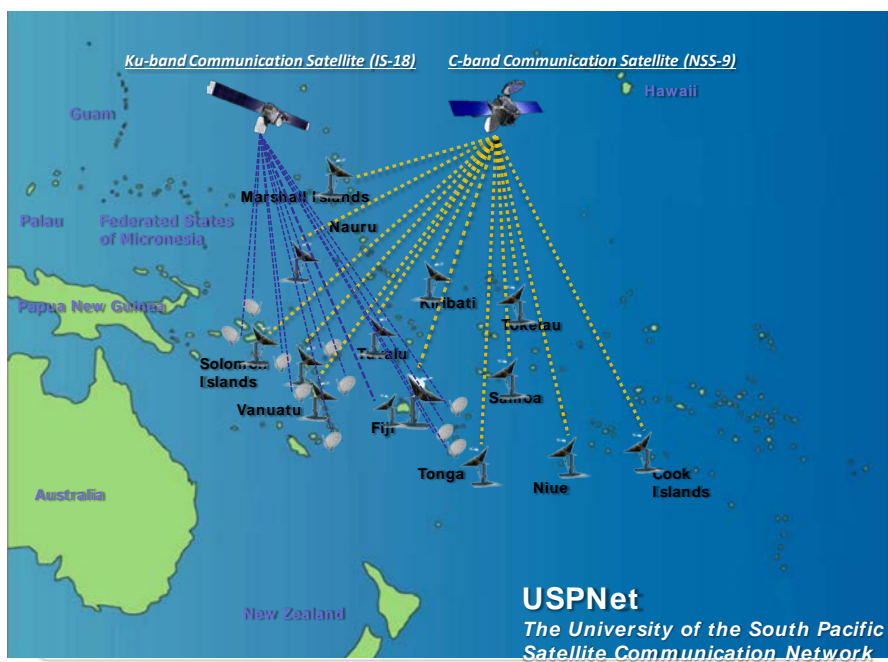
Courtesy: Shinya Murakami, JICA

Figure 1. USPNet coverage for the twelve member countries

The changing scene in HE globally has influenced USP, as evident in its efforts to change its traditional pedagogies, whether through innovative teaching and learning ideas or experimentation. Even print LE is Moodle-facilitated which is indicative of USP's journey along the elearning continuum (P, F, B, O) in all the four-faculties/academic units (FALE, FBE, FSTE and Foundation). However, there is a need to ensure that the value of elearning is more than just as a medium to access content for its potential, especially for communication and interaction is far greater than that (Garrison and Anderson, 2003). This is changing the 'learning ecology', providing learners with the possibility of finding the space that meets their needs along the elearning continuum. This in turn influences learners' preference for their learning environment.

A bricolage of theories combining western theories with Pacific was instrumental in providing a holistic view of the learning environments and how learners perceive them.
The Transactional Distance Theory (TDT) by Moore (1989, 1997) and Socio-cultural Theory of Cognitive Development by Vygotsky (1978) together with Pacific educators' views on learning through their works such as *Kakala* framework (Thaman, 2002) and *Vanua research Framework* (Nabobo-Baba, 2005) underpin this qualitative study.

Considering the push towards online and blended LEs in higher education in the region, it is important to examine learners' views for different LEs along the eLearning continuum. The focus of this study is to understand learners' preferences for their learning environment in PICs through two research questions:
1. What is the preferred instructional delivery mode/learning environment for the learners?
2. What are the learners' preferred instructional delivery mode/learning environment preferences?

Methodology:
This study is a part of a larger study where the sample was drawn from USP's Laucala Suva (Fiji) and Alafua (Samoa) campuses. This research is embedded in interpretive/constructivist paradigm with the aim to understand what constitutes learner's LE and the reason underpinning it. This is a qualitative study and employed thematic analysis. "Thematic analysis is a method for identifying, analyzing and reporting patterns (theme) within data" (Braun & Clarke, 2006:6). The data was analysed for descriptive statistics to get a snapshot of the learners' preferred LE across different levels (Under Graduate (UG) and Post Graduate (PG)), age-groups, faculties/disciplines and gender while thematic analysis was applied to understand the reason for their preference.

A six step process involving 'familiarization with data set', 'generating initial codes', 'searching for themes', 'reviewing themes', 'defining and naming themes' and finally 'reporting' was followed (Braun & Clarke, 2006). The reliability and validity was assured through a pilot study (N=20) and multiple triangulation. In order to enhance the validity, the responses were read and re-read followed by a systematic analysis of the entire data set. Some colleagues and participants were consulted to confirm the themes, which enhanced validity during this entire process. The process started with the collection of codes against the deductive themes (*a priori*) as well inductive themes; efforts were made to ensure that codes were not forced to the deductive themes. The themes were reviewed and revisited again after a week ensuring themes persist and ascertaining its reliability. The themes were then refined and effort was made to maintain coherence and consistency with accompanying narrative. The emerging themes are given in table 1.

Results and Discussion: Preference for learning environment with reasons for preference
A total of 945 learners (873 UG learners and 72 PG learners) responded basic questions to collect demographics of the sample: what is your preferred mode of IDM/LE and Why? The participants responded to this question on a paper and handed it back to the researcher. The preferred IDM for all learners (UG and PG) is illustrated in the figures 2 – 5 across the faculties, age groups and gender under the section "UG and PG Learners' preference for the IDM/LE". The response to "why" is reported under the section "UG and PG Learners' Reasons for preference"

UG and PG Learners' preference for the IDM/LE

(a)   (b)
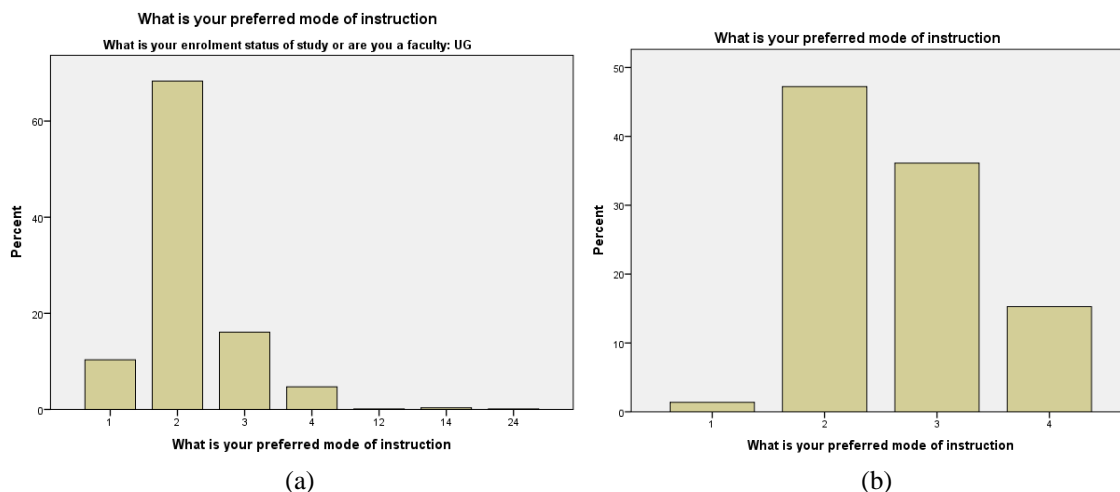
Key: 1=Print; 2=F2F; 3=Blended; 4=Online; 12=P&F2F; 14= P&O; 24=F2F&O
Figure 2: (a) UG and (b) PG learners' preference for mode of instruction within the sample

The UG learners' preference for IDM/LE (figure 2 a) shows F2F as overwhelmingly the most preferred mode and online as the least preferred mode of instructional delivery among the UG learners; 68.3% (595 UG learners) opted for face-to-face LE while only 4.7% (41 UG learners) opted for online LE. Additionally, a very small number (5) of the UG respondents indicated a preference for two of the choices (print and online). Whilst, the PG learners' preference for IDM/LE (figure 2 b) shows F2F as the most preferred mode, Print is rated as the least preferred mode of instructional delivery; 47.2% (34 PG learners) opted for F2F LE while only 1.4% (1 PG learner) opted for Print LE. It is seen, though that 36.1% (26 PG learners) opted for Blended and 15.3% (11 PG learner) opted for online modes indicating a total of 51.4% (37 PG learners) opting for LE that made use of VLE to a greater extent.

Considering the preferences for blended, online and print in both the groups, could the different learning needs in the two groups be affecting their preferences? A further analysis of preferences based on faculty/discipline (Figure 3 a and b), age (Figure 4 a and b) and gender (Figure 5 a and b) was carried out next.
UG and PG learners' preference for IDM/LE within each faculty
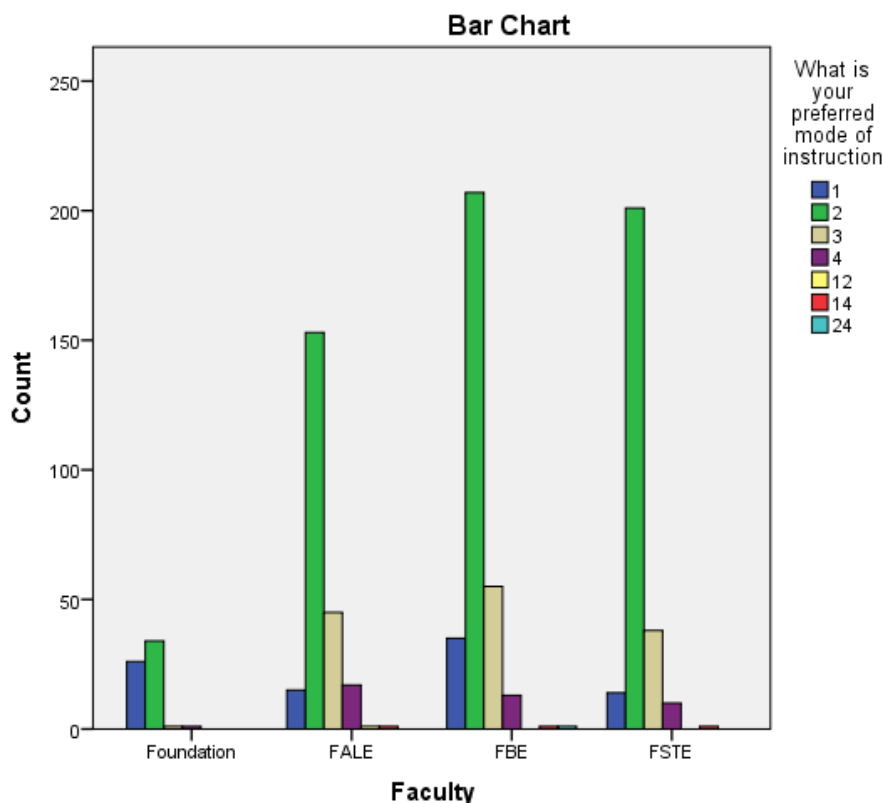
Key: 1=Print;   2=F2F;   3=Blended;   4=Online;   12=P&F2F;   14=   P&O;   24=F2F&O
Figure 3 a: UG learners' preference for mode of instruction within each faculty
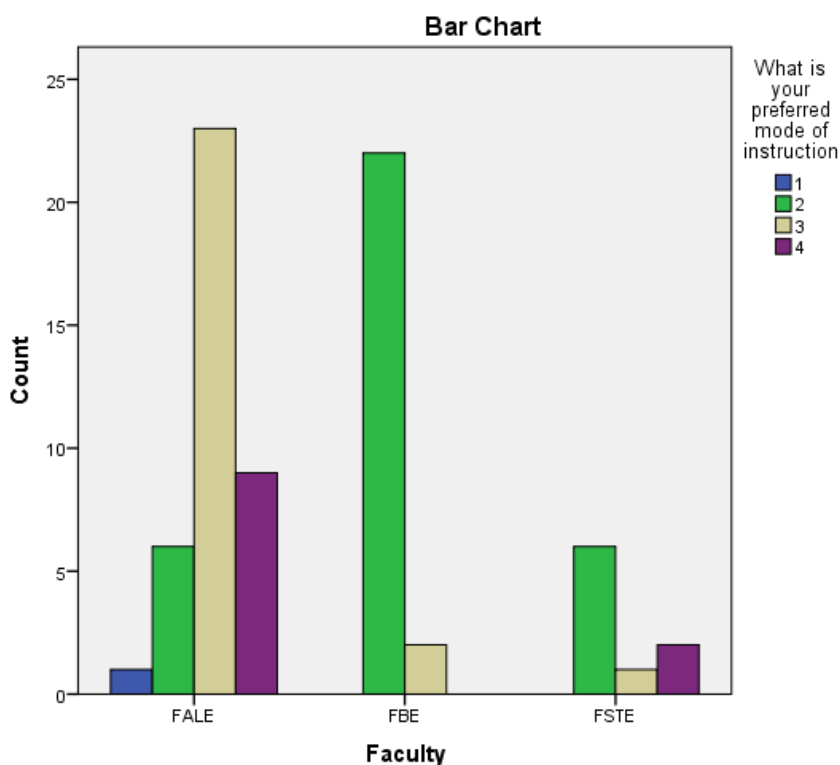
Key: 1=Print; 2=F2F; 3=Blended; 4=Online
Figure 3 b: PG *learners' preference for mode of instruction within each faculty*
The analysis of UG learners' preference for the mode of instruction on the basis of faculty (figure 3 a) indicates a strong preference for F2F mode runs across all four faculties (76.1% of UG learners in FSTE and 65.9% in FALE and FBE prefer f2f). The practical nature of subjects in FSTE could be one of the factors to influence

learners' preference for F2F, a point worth further investigation. In Foundation, 54.8% opted for F2F, 41.9% opted for print based DE. The preference for print by foundation learners is quite intriguing considering these are teen-aged learners who are technology savvy (Raturi & Chandra, 2016) and yet they prefer print based learning environments. The preference for print offers yet another point for further investigation. Print and online emerged as least popular choices amongst the UG learners in this study.

The analysis of preference for the mode of instruction on the basis of faculty (figure 3 b) reveals F2F mode as the most preferred option by learners in FBE and FSTE and Blended as the most preferred option by learners in FALE. A 66.7% of PG learners in FSTE and 91.69% of the PG learners in FBE preferred F2F mode, 58.9% of the PG learners in FALE preferred blended mode. On the other hand, 2% preferred Print and 23% preferred Online amongst PG learners in FALE, 8.3% preferred Blended amongst the PG learners in FBE and 11.1% preferred Online amongst the PG learners in FSTE; Print emerged as the least popular choice amongst the PG learners in this study. Interestingly, not a single learner opted for Online in FBE while 22.2% opted for Online in FSTE. The result for PG learners in FALE were similar to the study conducted in 2009 with a sample size, N = 92 (Raturi, Hogan & Thaman, 2011).

UG and PG learners' preference for IDM/LE within each age group

Key: 1=Print;   2=F2F;   3=Blended;   4=Online;   12=P&F2F;   14=   P&O;   24=F2F&O
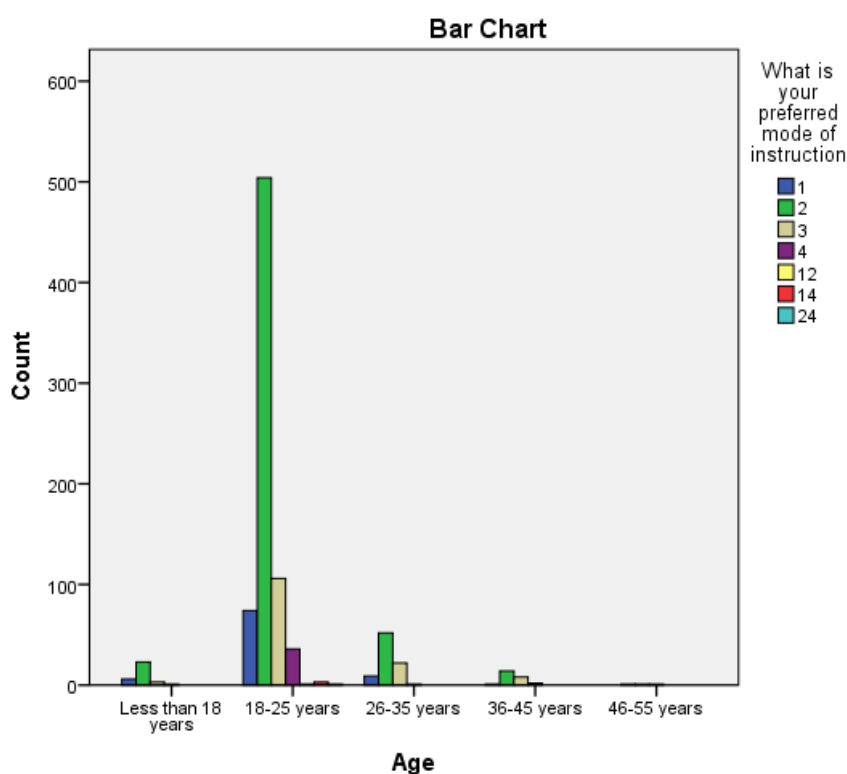*Figure 4 a: UG learners' preference for mode of instruction within each age group*
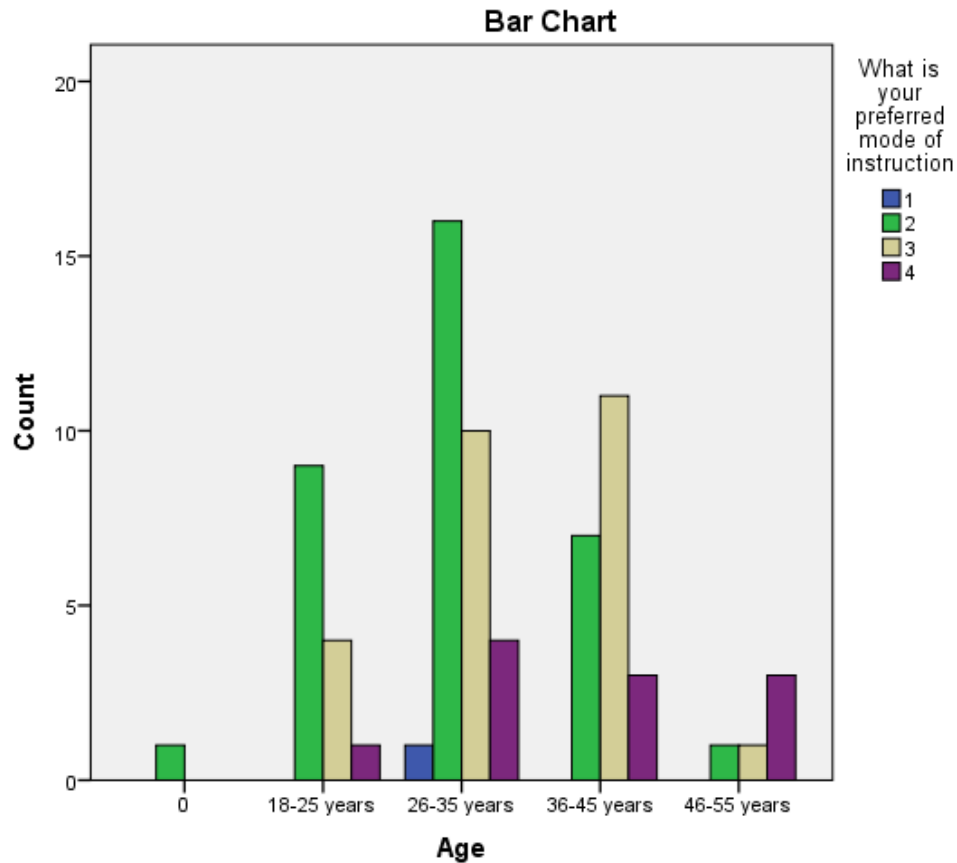
Key: 1=Print;   2=F2F;   3=Blended;   4=Online

Figure 4 b: PG learners' preference for mode of instruction within each age group (Note: "0" on x-axis refers to one learner who did not disclose her/his age group)

A total of 725 UG learners out of 870 valid cases fall in this group of 18-25years out of which 504 (69.5%) of these learners preferred the face-to-face mode whereas 36 (5.0%) preferred the Online mode (figure 4 b). The second dominant age group is 26 – 35 years; out of 84 UG learners in this age group, 52 (61.9%) preferred the F2F while only 1 (1.2%) preferred the Online mode. Interestingly, F2F mode emerged as the most preferred mode while Online was least preferred regardless of age of the learner. It is obvious that young learners consider coming to university as an important part of their learning, it would be worth investigating the factors that influence their preference for F2F.

The most common age group amongst PG learners is 26 – 35 years as evident in figure 4 b; 31 PG learners out of a total of 72 valid cases fall in the age group 26-35 years out of which 16 (51.6%) of learners preferred F2F mode whereas 10 (32.3%) preferred Blended and 4 (12.9%) preferred Online mode. The second dominant age group is 36 – 45 years; out of 21 PG learners in this age group, 11 (52.4%) preferred Blended mode, 7 (33.3%) preferred F2F and 3 (14.3%) preferred the Online mode. The F2F mode emerged as the most preferred mode with the younger age group while the older age preferred the Blended/Online mode. The preference for blended and online more by older learner is interesting and requires further interrogation.

UG and PG learners' preference for IDM/LE within each gender

Key: 1=Print;   2=F2F;   3=Blended;   4=Online;   12=P&F2F;   14=   P&O;   24=F2F&O

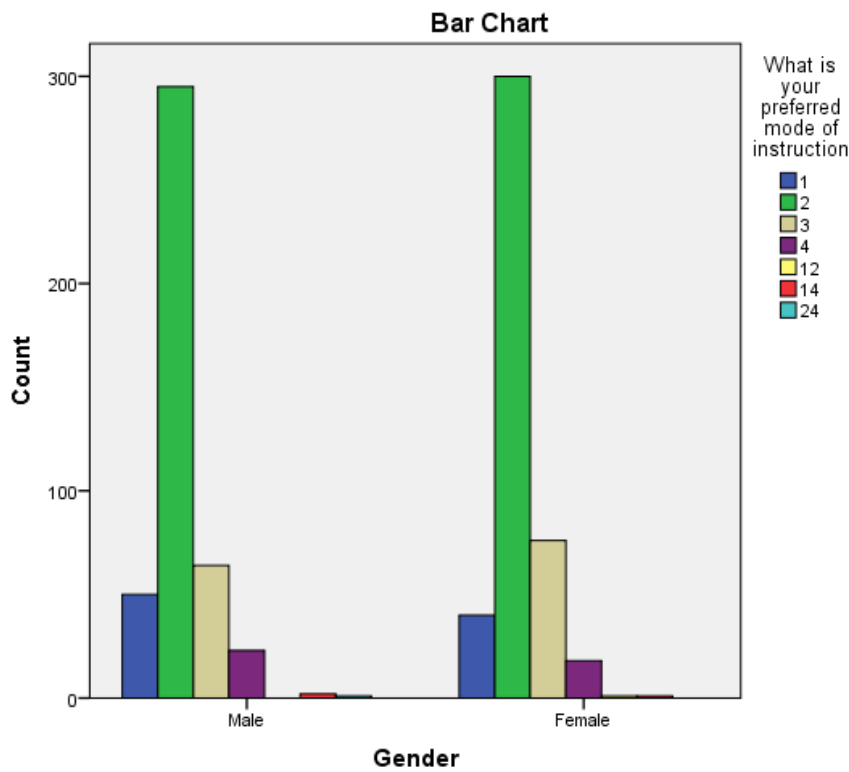*Figure 5 a: UG learners' preference for mode of instruction within the genders*
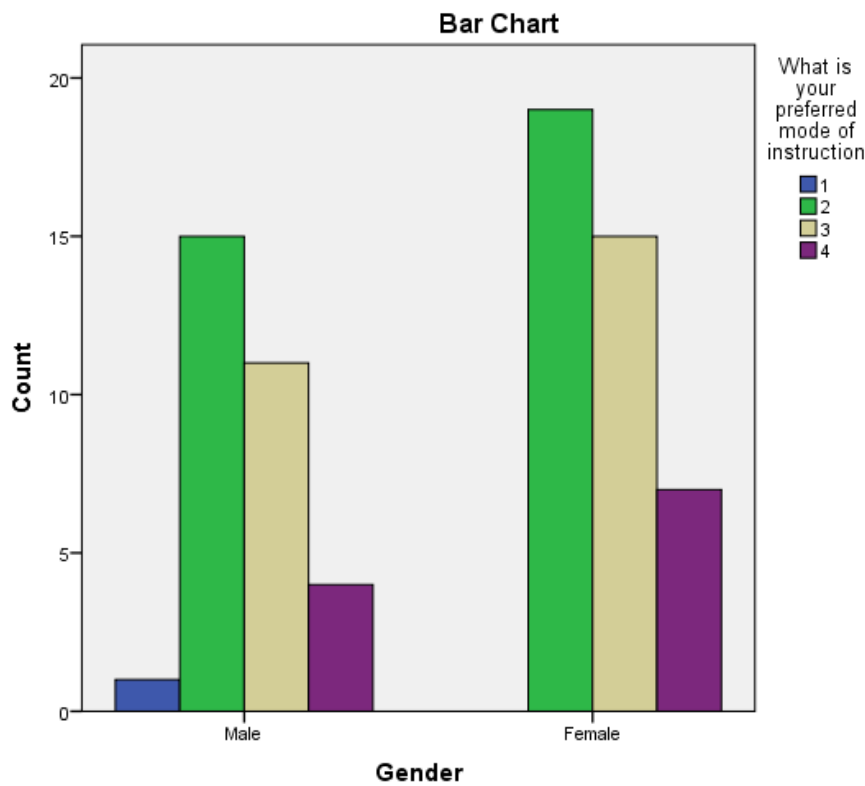
Key: 1=Print;   2=F2F;   3=Blended;   4=Online

Figure 5 b: PG learners' preference for mode of instruction within the genders

The number of males (N = 435) and females (N = 436) is effectively equal in this sample (N = 871); 2 learners did not specify gender. In this sample, 300 females (68.8%) and 295 males (67.8%) preferred the F2F mode

while only 18 female (4.1%) and 23 male (5.3%) preferred the Online mode. Therefore, the F2F LE emerged as the most popular one. On the other hand, the online environment was the least popular in all categories amongst the UG learners in this study (figure 5 a).

The number of males (N = 31) and females (N = 41) indicate that a higher number of females enrolled for PG studies in this sample (N = 72). The most preferred mode was F2F amongst both gender as evident in the figure 5 b. In this sample, 19 female (46.3%) and 15 (48.4%) preferred the F2F mode while 7 female (17.1%) and 4 male (12.9%) preferred the online mode. The face-to-face LE emerged as the most popular one while the online environment was the least popular in both categories amongst the PG learners in this study. However, the percentage for blended mode was reasonably high indicating an overall inclination towards modes that utilize more technology in both categories.

UG and PG Learners' Reasons for preference

A total of 859 out of 871 UG learners offered reasons for their LE preferences. A total of 88 valid responses for Print, 592 valid responses for F2F, 136 valid responses for Blended and 38 valid responses for Online and 5 for dual-preferences were registered. The majority PG learners (70 out of 72) gave reasons for three LEs (F2F, B and O). A total of 32 valid responses for face-to-face, 26 valid responses for blended and 10 valid responses for Online were registered from PG learners. The reasons for each LE (P/F2F/B/O) for the two groups of learners (UG/PG) were analysed within these groups following thematic analysis. Table 1 provides an analysis to understand how frequently each theme emerged in different IDM/LE.

Table 1. Frequency and Percentage for Reasons for Preference IDM/LE for ALL learners in four LE

LE	Emerging Themes	UG Frequency/N	UG %	PG Frequency/N	PG %
PRINT	Time	32 (88)	36	N/A	N/A
	Convenience and Flexibility	42 (88)	48	N/A	N/A
	Interaction with Instructor/Instructor (teacher) Presence	10 (88)	11	N/A	N/A
	Autonomy	14 (88)	16	N/A	N/A
	Use of ICT and its Reliability	8 (88)	9	N/A	N/A
	Cost	7 (88)	8	N/A	N/A
F2F	Efficiency and Effectiveness of medium and the Time Factor	298 (592)	50	10 (34)	29
	Real time/Practical Needs and Interactive LE	248 (592)	42	16 (34)	47
	Interaction with Instructor/Teacher and their Role	116 (592)	20	11 (34)	32
	Collaboration and Interaction with Peers	183 (592)	31	9 (34)	26
	Socialisation*, Convenience and Enjoyment	141 (592)	24	5 (34)	15
	Access to LE and support within LE	140 (592)	24	7 (34)	21
	Control over learning/staying focused	60 (592)	10	3 (34)	9
Blended	Duality of LE and Course Structure	86 (136)	63	13 (26)	50
	Efficiency and Effectiveness of medium* and the Time Factor	43 (136)	32	7 (26)	27
	Interaction with Instructor/Teacher Presence	26 (136)	19	4 (26)	15
	Autonomy	42 (136)	31	4 (26)	15
	Access to LE and Support with LE	67 (136)	49	8 (26)	31
	Convenience, Flexibility and Enjoyment	29 (136)	21	8 (26)	31
Online	Convenience and Flexibility	20 (38)	53	3 (10)	30
	Time	16 (38)	42	3 (10)	30
	Interaction	8 (38)	21	2 (10)	20
	Autonomy	5 (38)	13	4 (10)	40
	Course Structure	5 (38)	13	4 (10)	40
	Enjoyment	NIL	-	3 (10)	30

*Key: *Only for UG learners*

The analysis of the learners' reasons for preference is indicative of what constitutes their ideal LE. Words like 'interaction', 'feedback', 'immediate', 'understanding', ' easy', 'enjoyable', 'interesting', 'convenient', 'reliable', 'cheap', 'flexible', 'practical', 'first hand', 'interactive', 'efficient', 'effective', 'challenging', 'exciting' 'success' appeared frequently in this section. One word that dominated the conversations was 'interaction' and other connecting words with interaction were 'lecturer/tutor', 'colleagues/learners', 'content'.

Theme 1: Time

Print LE: The 'time' appeared as a crucial factor for Print based learners in this study and it came up most frequently (26 times) amongst all registered responses in the P LE category. The time factor was related to various reasons such as 'work', 'family', 'commuting time' and many commented on 'self-study' or just wanting 'more free time' to themselves. A typical response noted how time was 'less wasted in print and more effective':

> It saves time during a week to go to a class which are used in doing some assignments which helps me. Learn a lot rather than going in a class wasting time in lectures. One tutorial per week is enough to gather information from tutor about what is important to learn in that particular unit. (UG-P-60)

F2F LE: The UG learners in this F2F LE placed high value on the efficient and effective utilisation of their time and acknowledged role of ICT in enhancing their learning. However, quite frequently learners indicated that the option of not depending on ICT was 'reliable' and often saved time. The ability of the LE to provide instruction in a way that made it clear and understandable to learners with ample opportunities to interact was highlighted in the responses too. Some learners reported that 'dealing with problem areas with the teacher helps to tackle it effectively', and that 'ease of communication makes it more meaningful'. Other strategies that contributed to effective and efficient learning were also mentioned. One learner shared, "Learning is much more effective when the learning is able to create a good relationship with the person facilitating one's learning and this is possible through active involvement both parties in various activities." (UG-F2F-285).

The PG learners regarded F2F LE to be a most efficient and effective medium because it assisted their understanding without wasting much time (this is compared with discussions on VLE, which are sometimes prolonged) as they preferred prompt response to their queries.

The F2F LE was considered efficient and effective by both UG and PG learners in terms of prompt feedback and continuity in classroom discussion, unlike virtual discussions.

Blended LE: Learners found Blended LE a faster medium where learning took place effectively and time intricately linked to it; an indication of learners' changing needs and lifestyles. Despite the challenges with ICT access and experience for some learners, many reported their desire to master ICT usage for their learning advantages. A combination of online and F2F components in a blended LE seemed to provide efficient and effective LE urging learners towards becoming independent learners. The 'time' factor was linked with learners' need to 'work' and give time to family but today's learner showed the signs of autonomy too with changing lifestyle; as was evident in a learner's comments: "Blended as it is a combination of both [F2F and O] and my time is balanced out well through this mode. I don't have to be on campus everyday attending class as a result of my DF studies thus giving time for other things." (UG-B-60)

The PG learners were mainly working full time or part-time with very few studying as full time students in the university. This LE was perceived to provide them enough time and flexibility to carry out other activities or even extra consultations helping them manage their time well. "I have time to meet my coordinator at a fixed time to clarify doubts. Some statements in the course books really need explanation where lecturer's explanation is highly needed." (PG-B-17)

Online LE: It seemed important for some learners to be able to control the time spent on activities which is why some find online LE as suitable option. "It saves time and also money from travelling to USP every day since I am from west (of Viti Levu, Fiji) and plus daily expenses are expensive nowadays." (UG-O-9)

The control over their time is important for the PG learners considering the majority was working full time/part time. As the majority of PG learners had access to facilities that enabled their online learning, they felt this LE could allow them to manage their time well and maintain a good balance between their work, study and family. As one of the learner confessed: "It saves time because since I am working at time I have to rush to class. Online learning is easy as I have internet at home and work I can easily access it." (PG-O-2)

Interestingly, 'time' emerged as a theme across all four LEs depending on the learners' situations.

Theme 2: Convenience and Flexibility

Print LE: Some learners considered the print-mode 'convenient' for its 'course-structure' and 'flexible nature in terms of deadlines and attendance for tutorials'. Some learners considered 'flexibility' to be an important factor and felt that it gave them more control over their learning. The print course materials were 'appreciated' for its 'ease of reading' and convenience together with option of course structure on Moodle typified by such comments as: "…it has a course book where materials are given to you and notes are made for you. I don't have to go for lectures. I can listen to lectures online when I have time and the assignments make sense." (UG-P-15) The flexibility to 'read and work from home combined with tutorial time in school' provided some learners 'convenience' while some liked the 'pace', which seemed to have an effect on the workload.

F2F LE: The learners often described F2F-LE as very convenient for them. This convenience probably helps them to enjoy the whole learning experience. Hence, another point raised by learners was being able to enjoy what they were doing. ICT was considered an issue, with internet being unreliable for some learners; the learners who had no problems with access to ICTs found Moodle a convenient platform that supplemented F2F experience. In addition to convenience and flexibility, the learners viewed LE as a place where the social aspect of learner is nurtured together. The ability to create a sense of ease and excitement amongst learners' was yet another benefit learners' perceived in F2F. Some considered delivery of content in small quantities in a regular manner helpful for sustaining interest while others considered being able to interact F2F as ideal: "F2F class is more interesting when people/lecturers actually assist in their explanation of topics for better understanding. Also it is easier and strict but good." (UG-F2F-150)

The PG learners found instant responses and in class sharing of knowledge as a convenient way of learning. The LE also provided them the necessary stimulant to enjoy the course and felt comfortable doing it especially if learners had switched programmes at PG level.

Blended LE: The convenience of the blended appeared to link directly with its dual-mode nature, i.e. its format/course structure. The online component was viewed as a means to be 'guided online', 'access instructors as well as do the course work where I live'. These added to the convenience and flexibility aspects of the LE. The 'option to come to university less frequently' enabled 'convenience' for learners, which in turn seemed to provide learners the 'time' to take care of family, work and exercise their autonomy and so on. In the words of another learners, the Blended mode was, "Convenient for my family time, travelling time, expenses and spending all day in campus is sometimes waste of time. I work well at home. I am a wife and a full time student." (UG-B-11)

Convenience was afforded through part dependence on F2F and online for PG learners; considering the electricity and internet connectivity issues within the region. The learners' reasons for convenience varied and the cost for commuting versus cost for ICT access is worth further investigation. However, the readiness to embrace ICT for their future career was quite evident in their responses.

Online LE: The Online LE was deemed convenient because it allowed learners to work from any place any time, which in turn provided learner flexibility to prioritise their needs in life as well as maintain a balance between work, home and study. As shared by a respondent: "You can stay back home. Enjoy your family while in study. Work at your own pace at time convenient to you. Save money (accommodation, transport, food except internet bill). More portable than other modes." (UG-O-6)

Convenience for PG learners meant they were able perform all the activities related to the course at their own pace and time be it interaction, the readings or learning on their own. Some learners indicated that they enjoyed the course as it offered them convenience. Others gave a mix of reasons for their convenience and flexibility to study at their own pace and time.

> For me as a full time worker, it is convenient. Also I think I learn better online, I think it is also my age too…after a few hours in the F2F class, I feel sleepy but online, I can study in my own time when it is convenient to me and this helps me focus better, focus more...I can think and reason out things better when my mind is clear. (PG-O-6)

Theme 3: Interaction with Instructor/Instructor presence (Teacher presence)

Print LE: Learners considered the interaction with the instructor for tutorials important for various reasons but limited interaction time with tutor/tutorial time was considered 'time-effective' and 'reliable and easy to cope

with facilities and tutors'. Typically: "…it [interaction] is important for print mode students since students' life becomes easy as there are less chances to fail their units." (UG-P-14)

F2F LE: The importance of the teacher's role was the one that stood out in the learners' responses (both UG and PG) as the most important feature of F2F learning. The 'interaction with teacher as the sole knowledge provider to facilitator', 'interaction with teacher from cognition to support' are the emerging sub themes although there were a number of intersecting points of interest amongst these two sub themes in learners response. Over 50% of the responses mentioned some form of teacher support/role. This emphasised the enormous responsibility of the teacher/instructor as well as the importance of learners' expectations.

> *a.*   Interaction with Teacher/Instructor: From *sage on stage* to *guide by the side*

The interaction with teacher/instructor or even the mere presence of teacher in a F2F LE seemed important from a variety of viewpoints ranging from the sole knowledge provider to facilitator and importance of same physical vicinity to enhance learners' interest.

> Because I prefer to look at the lecturer while she/he is explaining the notes. This is because listening and reading all the time demotivates me in my study. I get bored and sleepy when I listen and read all the time [on my own]. Watching the lecturer makes me enjoy the class because the actions or teachings are enjoyable. They make you smile, laugh and learn as well. They also give advice to you during class which is good and relevant to our studies and lives. (UG-F2F-36)

While the enormous 'trust' in having the teacher teach in the same physical vicinity was considered important, so was the frequency for 'interaction', teacher as the ultimate 'owner of the knowledge', 'solution to all problems', opportunity for 'same time response', 'all time access' in conjunction with 'response time' and 'instructor access'. This highlights teacher immediacy in the LE.

> *b.*   Interaction with teacher (instructor): From *cognition* to *affection*

The role of instructor was one where instructor was viewed to provide the necessary support when needed, be it advice on the subject or just encouragement; both were considered equally important. The learner's feeling of 'comfort and success' was also attributed to the 'interaction with instructor': "We are able to interact with our lecturer while having lectures so it makes me feel comfortable since I have any enquiries I can go and see the lecturer." (UG-F2F-191)

The learner's satisfaction with the process of learning and cognition was attributed to the instructor's immediate help enabling clarification and dialogue which were highly valued by learners. The interaction with instructor for specific purpose when it came to cognition and learning was highlighted be it for 'understanding abstract concepts' or 'scaffolding' or 'learning with tutor'. The learners appreciated the F2F environment in which instructor constituted an important part. The value of human interaction was highlighted too; something that educators would need to bear in mind since learners consider human computer interaction as artificial. An informant stated:

> It's real. I get to meet real people (tutor, lecturer, professor) who deal with my learning experience directly. I learn from my mistakes on the spot and given positive and negative feedback at the same time; I am able to explain my problem to my mentor much more better rather than sending email. (UG-F2F-539)

The PG learners too for their preference for F2F LE considered 'Interaction' with instructor as the most important reason. The role of instructor came out not so much as a 'sage on stage' but rather as a 'guide by the side' amongst the PG learners' responses. These were, however, exceptional cases where the role of the instructor as the 'sage on the stage' was favoured. Immediate feedback from instructors in F2F LE emerged as one of the key characteristic. As one student observed: "I learn better in a class environment and prefer structured courses that doesn't leave too much in student's hands to pursue in terms of information/answers. I like asking questions and getting immediate feedback rather than relying on email communication." (PG-F2F-31)

Generally, the PG learners considered teacher's guidance and their role a very important aspect of F2F LE. It is evident that the all learners have high regard for their 'instructor' consider instructor an important part of their learning environment.

Blended LE: The interaction with the instructor and instructor presence gave learners much assurance for learning success. Some learners preferred 'human interaction' within the same physical vicinity; however, for some, online interactions with instructor were better options especially communication via email for those too shy to question in person. It emerged clearly that the learners opted to lean on instructors only when it was an absolute must, although they considered instructor presence important. The learners expressed the desire/need to

be part independent and this LE seemed to enable that. The important point that learners raised was that they could make use of the instructor's presence to different extents depending on their needs. It was generally felt that the blended mode provided more opportunities. As one learner commented: "[The Blended mode] helps me to do a lot of thinking as well as learning on my own without constant guidance by lecturers or tutors, they are there though if need be and if I need to be corrected and directed in the right path." (UG-B-110)

The changing role of the instructor was evident in the learners' responses; however, the instructor presence was still a desirable factor. The need to interact with the instructor, peers and the content was reflected in the responses. The interaction with learners from the region through the online component of blended mode was appreciated by the learners, alongside the general appreciation for F2F discussions in the class. It also appeared that learners appreciated a well-designed course structure on Moodle highlighting how online content supplements teacher's guidance during the F2F sessions. The affective needs of learners even at this level were notable and are evident in a learner's views: "Online component helps with everything being documented, one can refer to it easily and it is transparent. F2F component helps with the social connection, which is important to facilitate learning. Also come concepts that can be taught F2F may be difficult to be taught online." (PG-B-7)

Online LE: The learners considered interaction for a variety of needs such as interaction with the instructor to gain information, interaction with other learners to exchange ideas and interaction with the content to gain information anytime, anywhere. However, the interaction with the content appeared as the most popular interaction because it could be carried out anytime anywhere. Interactions with content and instructor were reflected in a few earlier responses quoted for online LE so far. A response for interaction with learners is exemplified here: "…because it is more interesting. You can interact with many onliners with different ideas and topics. "(UG-O-33)

The PG learners indicated that interaction with instructors, peers and content helped and highlighted the need for more interaction; a point that needs to be taken into consideration given the connectivity issues. One learner informed that the Online LE allowed her to

> …get to ask Q from my other colleagues without pressure of who is asking [adding that she was able] to post ideas to which discussions will form… [and that] Additional readings are hyper linked to topics so readings of notes are easy and straight to point… [and stressed] coordinator responses is what I think is much needed. (PG-O-1)

The three types of interaction (learner–instructor, learner–learner and learner content) have been noted in learners' responses here. Interaction was one of the most frequently appearing words across all four LE.

Theme 4: Autonomy

Print LE: Some learners showed a keen sense of ownership towards their learning by expressing 'not having to rely on lectures', taking control of their actions and the desire to be an independent learner. Learners believe that taking responsibility would enhance their cognitive capabilities. Another UG learner articulated the challenges and benefits that come with autonomy: "…test your own potential to do the course…lot of encouragement and challenging…more time for self-study…comfortable to study from home or dorm…improve self-learning and reduce dependency on lecturers and tutors." (UG-P-87)

F2F LE: *Autonomy* emerged in learners' response that expressed their determination to "stay focused in studies" and take "control of [their] learning".

Blended LE: The learners noted that the blended LE helped them to create their own learning experience, which in turn nudged them towards 'autonomy'. The learners indicated their desire to be at least partly independent learners and their responses exemplified this desire: "Does not require us to attend face-to-face classes every day, therefore saves money on travelling. Allows us to take control of our own learning and try to become independent learners rather than depending on the lecturers and tutors often." (UG-B-13). Many responses gave an indication of the 'urgency' to be independent learners as echoed in the comments of a learner: "…we must learn by ourselves" (UG-B-5).

The PG learners considered blended a suitable environment to develop independent learning skills at their own pace and time. One learner said, "It enables me to work with the teachers and at the same time create some independence on how I approach my learning." (PG-B-12)

The learners' desire to exercise autonomy (sometimes) is the learning need of 21st century PI learners, an important point for educators to know so that they can figure out how to enable it.

Online LE: The learners liked being independent and this was reflected as one of the reasons for their preference too. According to a participant: "because it doesn't demand a lot of our time coming to school for classes and we can always depend on ourselves." (UG-O-34)

'Autonomy' is another aspect that has emerged across all four LEs; this is yet another trend among the 21st century PIC learners.

Themes specific to certain LE
The next eight themes were prominent in specific LE/s but the essence of these could be derived as a by-product of analysis even though scant. Therefore, there is a need to investigate factors affecting the LE further.

Theme 5: Use of ICT and its reliability

Print LE: Moodle is now integrated in all print-based DE courses and the use of email and discussion forum was evident from the learners' responses; with some learners acknowledging its use to enhance their learning. At the same time, some learners mentioned the use of print based resources as more reliable than online resources (mentioned under 'convenience and flexibility' earlier). This difference in preference depended on learners' individual access to ICT. Those with access to discussion forum felt this provided them an avenue to discuss more freely as some were shy to discuss in class. ICT access enabled them to: "...access notes from Moodle at home, …contact tutors through email and discussion forum… keep up-to-date with information." (UG-P-90)

Considering the ICT access and infrastructure in the region, it is an important factor, which needs further investigation in different LE.
Theme 6: Cost

Print LE: The cost of the course and the cost for commuting were reported as determining factors by some learners in P LE. Considering the learners demographic and their socio-economic background, impact of *cost* on LE demands investigation.
Theme 7: Real-time/practical needs and Interactive LE

F2F LE: The presence of the human touch in the LE was deemed essential for various reasons with repercussions on the ability to conduct learning activities with 'resources' (physical artefact, physical presence of people) in a live/physical environment. Learners preferred 'hands on' experience, 'learning by listening and watching the teacher in class' and 'opportunity for F2F conversations'. The authentic learning experience with 'real life examples' and constant in-person interaction was deemed essential for their learning success. Science learners expressed a clear need for physical laboratory sessions over virtual. It was evident from the responses that the learners saw F2F as the most interactive LE, which provided them enough challenge to reach their ZPD and engage in meaningful construction of knowledge; however, the teacher remained the MKO in this equation. At the same time, use of ICT in creating higher level interactive environments was acknowledged by the learners and so was the challenge of using ICT: "Learning is much more effective when the learning is able to create a good relationship with the person facilitating one's learning and this is possible through active involvement of both parties in various activities." (UG-F2F-285)

The PG Science learners expressed need for hands on experience more while others commented on the need for live interactive discussions to make the learning process worthwhile; the F2F LE seemed to provide these according to this group of PG learners. According to a learner: "More practical can be done [for] hands on experience and…to evaluate performance." (PG-F2F-13). The interactive aspect for PG science learners generally focused more on laboratory/field work while PG learners in other disciplines focused more on dialogical sessions for an interactive LE.

The interactivity with/without use of ICT was considered useful for learning. The real-time learning was important to a lot of learners, especially the learners engaged in subjects requiring practical skills such as Science students. Another important point that came out of this theme was the learning style of Pacific Island learners and their preference towards the LE; an area that requires further investigation.

The *real-time/practical needs and interactive LE* did not seem to bother learners who prefer the other three LEs (P, B and O).

Theme 8: Collaboration and Interaction with Peers

F2F LE: UG learners enjoy working with peers or in groups for it acts as an important source of information gathering and processing during the F2F classes. It appeared that F2F collaboration with peers helped learners exchange and express their ideas better. The 'ability to interact directly with teacher and learner at the same time in F2F', 'gaining confidence and knowledge through F2F interaction', 'opportunity to know the person during F2F interaction' were some of the benefits perceived by learners in F2F. The learner's environment where peers can take turns to act as MKO was seen to construct meaningful knowledge. Learners considered F2F LE conducive to 'sharing of information, ideas with peers', 'co-construction of knowledge with peers' and 'maximising exchange of knowledge and ideas'.

Theme 9: Access to LE and support within LE

F2F LE: Some learners commented that the F2F mode provided access to more resources and support than any other LE. The extra resources were viewed to provide more opportunities for learning and helped to maintain focus. This in turn helped them carry out important activities for their learning processes. The learners equated the cost of course at the university to its value for quality learning with all the resources and support. The access to more resources was also seen as a way to keep them focused and up-to-date with information. Whether access was to detailed notes, increased contact hours with an instructor, reminders and notices, it was seen as a factor influencing their preference for LE.

A 'support-system' was considered an absolute must and F2F LE seemed to provide the best support to the learners; increased and continuous support from instructors in F2F LE was considered a safety net for learners. The learners valued F2F interactions with tutors as more reliable than online consultations and they felt prompt online consultation could be considered in a Blended LE. However, the instructors were considered the most important extended resource in F2F LE and an indispensable part of the learner's LE.

> I like the interaction with the teachers and group discussions in class. I learn better using all my senses and retain more that way, than by merely reading off a computer screen. F2F also gives more value to what you pay in fee for tertiary studies. Its not a short cut method of learning. (UG-F2F-590)

The learners were mindful of the pitfalls in their learning journey and acknowledged their weaknesses and the need for an antidote for them; the university's physical environment with all its resources acts as one such 'salvation'.

This group of PG learners also appreciated F2F LE for the extended resources and support it provided. This is evident in the response of one of the learners: "I like the interaction and use of resources such as computer labs. (PG-F2F-21)

Blended LE: The duality of the mode brings the best of the two worlds. The learners reported blended LE provided them access to F2F as well as online LE resources. Therefore, some learners found the blended LE reassuring and identified access to resources and support as one of the reason for their preference. According to a learner: "More flexibility in location…frees up schedule. Also [the Blended mode allows access to] more resources…tutors and lecturers online." (UG-B-90)

The PG learners saw blended LE as providing them with access to resources and academic support. One learner reported she opted for blended, "…because it allows for some flexibility. Not entirely so that you can have some feedback through your course while you have the freedom to learn at your own pace, there is some sort of 'grounded' approach to help you keep check with your progress." (PG-B-21)

The access to resources and support was an important feature for Blended learners especially as the access to 'support' has been noted to tackle 'isolation' which is considered a major deterrent in DE in PICs (Thaman, 1991) as well as around the world.

Theme 10: Duality of the LE and Course Structure

Blended LE: The fact that blended is a mix of online and F2F LEs seemed to have worked in favour of this LE as this was the most popular reason given for its appeal to more than 50% of the learners in this group. The learners' responses included 'best of two worlds', 'flexibility to use the mode as convenience', 'normal human

interaction' 'no dependence on online mode alone', 'honing ICT skills for real world' as justification for their choices.

The learners indicated that the F2F mode provided them opportunities to carry out 'hands on activities'. The Science students particularly liked this feature when it supplemented online offerings but what was even more interesting was that they saw a combination of f2f and online LE as conducive to their becoming independent learners.

> You don't have to attend all the classes which would sometimes be boring. Like for XX000 (course identity hidden), we have online classes as well as F2F so when having online mode students are made to be independent to solve in lab, post lab activities on their own…!! Its independent learning!! (UG-B-65)

The fact that blended was a mix of online and F2F LE made it as the most popular reason for the preference for the PG learners too. The responses included 'best of two modes', 'flexibility to use the mode convenient', 'normal human interaction', 'no dependence on online mode alone', honing ICT skills for real world' and 'catering to various age and working groups'. The duality in terms of availability of F2F and online to carry out interaction as it suits individual learners enables independent learning and enhances the whole learning experience. One learner explained that, "Considering we have internet connectivity issues, I cannot opt for online but blended. It gives us choice of F2F and online to interact depending on what situation is like." (PG-B-27)

The combination of F2F with online worked quite well for some learners as it enabled them to carry on virtual discussions with whoever was available. Comprehensiveness and immediacy were the main features appreciated by some learners while some learners indicated the challenges and fear of using technology and their own efforts to overcome this fear while enjoying the mixed mode learning now.

Theme 11: Course Structure

Online LE: The learners found the ease of accessing the course online and carrying out activities as one of the reasons for their preference. A learner stated the course structure made it, "easier to access resources and materials. As students, it becomes easy to express opinions and any query to your lecturer." (UG-O-39)
One can only speculate that these learners who have preferred this LE must have reasonably good access to ICT (most of the time), an issue that needs further exploration.

Theme 12 (Unique to PG learners in ONLINE LE only): Enjoyment

Online LE: The PG learners seemed excited to be able to use technology to learn and regarded the online LE as 'fun'. Also, because Online LE did not disturb their other activities and responsibilities, the small number of PG learners seemed very receptive about online learning. And this was voiced by one of the participant:

> Since everything these days is technology based, I would prefer to learn through tech and also it will be very easy and convenient at work place; it is user friendly for both the students and facilitator; could be easily referred back to (at later stages); fun/exciting; as informative as F2F environment. (PG-O-9)

Though it is PG learners who considered online learning as an 'enjoyment', yet it is a factor if incorporated properly could make any LE desirable.

Conclusion and Implication
There are some points of interest in preferences, especially in terms of younger learners (UG) and discipline for higher education institutions; these have considerable implications on learning environments in higher education.
1. A majority of UG learners prefer F2F whereas the PG learners' preference is divided between F2F and blended/online LE.
2. A majority of PG learners in Arts, Education & Law (FALE) and Business & Economics (FBE) prefer blended LE where as Science, Technology & Environment (FSTE) prefer F2F LE.
3. Preference is gender neutral for learners in this study.
4. The 21st century learners consider 'Time', 'convenience and flexibility', 'interaction' (of all kinds) and autonomy as important factors of a LE which in turn influences their preference for it.

The younger learners prefer F2F LE, which initially seemed a bit intriguing. However, the reasons for their preference enable us to understand what is important to the learners. The preference for blended LE by PG learners in FALE is similar to findings by Raturi, (2010) in which the PG learners in a small group localised in School of Education opted for blended LE. This implies that humanities at PG level can provide learners

satisfaction and meet their learning needs in a blended LE; it is also an affirmation of changing learners' needs in the PICs. On the other hand preference for F2F by the majority of learners implies increased ability to perform on task in F2F LE for specialised activities including laboratory and fieldwork in Sciences and honing debating skills. These were also similar to findings of other studies abroad (Alarcon Tutty & Klein, 2008; Ndahi, Chaturvedi, Akan & Pickering, 2007; Olympiou & Zacharia, 2012). However, the fact that an overwhelming majority of UG learners prefer F2F LE is indicative of how important social and perhaps even academic relationship in real time and same physical space is for these young learners; it would be worthwhile to interrogate it further. Preference for LE was gender neutral. Technology was not an issue for female learners (Raturi and Chandra, 2016) rather it was considered to be advantageous. Some considered that VLE component helped female learners with not having to 'commute during odd times'. Female learners in PICs have limitations in continuing their higher education in traditional LE and it is evident that technology supported LE provides them an opportunity to study further.

Majority of learners highlighted convenience and flexibility of the LE they prefer as one of the reasons; this was the case for each of the four LE along the elearning continuum. This is an important factor, which added to learners' satisfaction with LE (Raturi and Chandra, 2016). UG learners were able to reach out for support more easily F2F while PG learners in VLEs, and this added to their satisfaction with the LE. The important point that arises from this investigation is that learners preference was The issue of support for learners to enable their learning successfully has been pointed out as an important aspect in many studies (Bose, 2011; Thaman, 1992). Similarly, the learners' choice for a preferred LE depended on factors such as course/subject area, convenience and flexibility, access to ICT and related skills, level of intrinsic motivation and personal reasons like work-commitments and family obligations and cost of the course. Some of these factors were reported by previous similar studies (Gulati, 2008; Hogan, 2010; Hogan & Kedrayate, 2010, Raturi, 2010). Furthermore interaction of all kinds, level of autonomy and course structure influences learners' preference for their LE, which is a subject of further investigation; it highlights the need for course design to take interaction, course structure and autonomy into consideration. The cultural aspects (Nabobo-Baba, 2005; Thaman, 2002) were also seen to play a major role in determining the preferred LE and therefore, it is important that this factor is given due consideration by higher education institutions and also warrants further research.

The fact that there are a good number of mature age learners, HE providers have a responsibility to fulfill their learning needs. Thus, there is a need for further research to understand factors affecting learners' LE such that these LE are conducive to all PI learners. Though, it is clear that 'time', 'convenience and flexibility', 'interaction' (of all kinds) and autonomy is the four crucial aspects for learners regardless of their preferred LE. Thus, the higher education providers in the region of the South Pacific need to consider the LE preferences by learners at different levels and ensure to provide the Pacific learner options for different LE. This would be true to certain extent in majority of developing countries context too as well as learners from first generation immigrant and minority groups in developed countries.

In light of the fact that a number of higher education institutions around the world are beginning to embrace virtual learning environments including the MOOC providers, there are no boundaries for learners or instructors; even a student from Tuvalu (the second smallest island nation) may enroll for a course or micro-degree programme. This study should assist tertiary education providers in any part of the world to understand learners needs if they want to cater to diverse learners from around the world.

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